

APSTRACT

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PREFACE

The fourth bi-annual AGRIMBA congress was organised in Porec, Croatia, June 16-20, 2015. Its theme was 'Smart agribusiness for the society of tomorrow'. We thank the organizing committee lead by Mario Njavro and Josip Juraciak, Faculty of Agriculture of the University of Zagreb, who did an excellent job.

This congress was successful both in terms of number of participants as in the quantity and quality of the papers presented. Participants came from east and west Europe, and from other parts of the world. Lively discussions were reported during and after the congress.

This volume of Abstract is a special issue, in which papers are published that have been presented at this congress. The reviewing and editing was organised by Marija Cerjak, Faculty of Agriculture of the University of Zagreb. We thank her for the excellent work that she did for this special issue.

Various aspects of agribusiness and commerce are dealt with in this issue. It starts with a case study on organic food sourcing, processing and distribution in Slovakia, followed later on in this issue by a paper on two case studies of the characteristics of value based organic food chains in Slovenia. Two papers deal with the wine industry in Croatia. In one paper attention is paid to risk and competitiveness of the wine sector, whereas another paper focusses on the wine market and wine exports of Croatia. Another paper discusses the economic performance of Croatian farms based on the newly introduced Farm Accountancy Data Network.

Attention is paid to the societal context of agribusiness and commerce. One is rural development and rural modernization. In an extensive study trajectories of agricultural modernization and rural resilience are explored based on case studies in 14 countries. It is emphasised that local capacities for transdisciplinary research need to be strengthened and that more attention should be paid to modernizing potentials that are less mainstream. Another paper investigates challenges to sustainable rural development in Russian rural areas. It gives growth points and recommendations. One paper focusses on the bio-based economy and the transformation of biomass into energy in particular. It is found that the energetic efficiency of biogas is higher than the one of bio-ethanol. The gap between act and deed of consumers in the social responsibility question is addressed in the paper with the title "Is it worth being socially responsible?"

Meditation may be useful for you, but it can also an interesting business for sustainable tourism, as is demonstrated in a paper on this topic for the case of Hungary.

Two papers deal with labour market status of graduates. In one paper graduate students' opinions about entrepreneurship as an employment opportunity are analysed in a high unemployment setting for youngsters, whereas the special issue ends with a short paper on the societal success of MBA-programmes.

The next congress in 2017 will be organised by the University of Debrecen, Hungary. The first call for papers will reach you soon.

Wageningen, March 2016

*Wim Heijman
Johan van Ophem*

ORGANIC FOOD SOURCING, PROCESSING AND DISTRIBUTION: A CASE OF SATISFYING A GROWING MARKET

Bruce L. Ahrendsen¹ – Peter Bielik² – Elena Horská³

¹ Professor, Department of Agricultural Economics and Agribusiness, University of Arkansas, Fayetteville, Arkansas 72701 USA, ahrend@uark.edu

² Professor and Rector, Slovak University of Agriculture in Nitra, Slovak Republic

³ Professor and Dean, Faculty of Economics and Management, Slovak University of Agriculture in Nitra, Slovak Republic

Abstract: A case study of an organic food company in the Slovak Republic involved in producing and sourcing inputs, food processing and distribution is presented. The case is based on a June 2014 “live” case study prepared for students in International MBA in Agribusiness programs at the Slovak University of Agriculture in Nitra, Warsaw University of Life Sciences and the National University of Life and Environmental Sciences of Ukraine, Kiev.

The company was established in 2001 with the objective to bring organic food to health conscious consumers. The company grows organic spelt grain, wheat, rye, buckwheat, herbs and apples on its 156 ha and 400 ha of owned and rented farmland. The company further processes these crops into more than 40 finished products.

Students are presented with company information and summaries of a company visit and discussions with management. Students perform PEST and SWOT analyses, identify a shortage of owned and leased land as a problem the company must address, conduct research and analysis, and recommend product specification contracts as a solution to the problem.

Acknowledgements: This work was supported, in part, by the USDA National Institute of Food and Agriculture, Hatch/Multistate project 1005079. However, any opinions, findings, conclusions, or recommendations expressed in this thesis are those of the authors and do not necessarily reflect the view of the U.S. Department of Agriculture.

Keywords: case study, education, food product, organic, production contract

Organic Food Sourcing, Processing and Distribution: A Case of Satisfying a Growing Market

Introduction

The purpose of this article is to improve the attractiveness of studies in the field of business administration with special emphasis on agribusiness. The article contributes to the exchange of experiences in course management and teaching processes by presenting and discussing a case that enhances the attractiveness of educational programs. In particular, the case study utilizes political, economic, social and technological (PEST) and strengths, weaknesses, opportunities and threats (SWOT) analyses applied to an organic food company in Slovakia.

Case Study Background

Day 1: Getting Started

Twenty-five students have gathered to participate in the joint study week of the International MBA in Agribusiness and

Commerce (AGRIMBA). The students come from AGRIMBA programs at the Warsaw University of Life Sciences, Poland, the National University of Life and Environmental Sciences of Ukraine, Kiev, and the host for the week, the Slovak University of Agriculture in Nitra. Most students arrived only a couple of hours earlier and have checked into the pension where they will stay for the next few days. The early evening light is quickly fading to darkness as introductions are made and students meet each other around tables lit by candles. The students are presented with the objective of the study week which is to provide a recommended course of action for a company to improve its business. Each student then signs up to be a member of one of four multinational teams. The next morning two teams will visit a joint stock company with both crop and livestock production as well as non-agricultural interests, although the company primarily specializes in milk production. The other two teams will visit the Company Ekotrend Myjava, Ltd., which is the focus of the case presented here.

Day 2: Company Visit

It is a bright, sunny, warm day in Podkylava located in the western part of the Slovak Republic. Two teams consisting of a total of 13 students set out from the pension for the short drive to visit the company Ekotrend Myjava. The company is located in Rudnik in the Myjava region not far from the Czech Republic border. The students begin with a tour of the operation when they arrive followed by a detailed discussion with management (Figure 1).

Ekotrend Myjava was established in 2001. The company's vision (Ekotrend Myjava, 2014) as translated from Slovak to English is:

We want to bring organic food as an alternative to conventional food for those people who care about healthy lifestyles; the countryside in which their children will grow up and develop native country - Slovakia. This lifestyle is knowledge of the positive benefits of organic food and commune with nature. Organic method of farming to protect soil, water, air, biota, animals, plants, and so actually ourselves and our children. Production of organic products we are trying to achieve by using the right approach and not artificial fertilizers and chemicals. Our goal is to help the return of man to nature, and therefore the motto of our company is: Discover the taste and the power of nature!

The company started out by producing herbs and later expanded with the planting and processing of spelt grain into flour and eventually pasta products as well as the production of other eco products. In 2005 the company became the exclusive distributor of the products it manufactured. Ekotrend Myjava has continued to grow into a company with many activities. It owns and operates an organic farm with an area of 156 ha as well as operating 400 ha of leased land. Slovakia is a country with a sizable 8.6 percent share of its agricultural area in organic production in 2012 (Katsarova, 2015). Neighboring Austria and Czech Republic have greater shares (18.6 percent and 13.1 percent) while Poland and Hungary have lower shares (4.6 percent and 2.4 percent) of agricultural area in organic production. Ekotrend Myjava's operation includes the cultivation of spelt grain, wheat, rye, buckwheat, herbs and an apple orchard. Besides organic production, the company undertakes food processing (Figure 2), packaging of pasta and tea, distribution, and wholesale and retail sales including the purchase and sale of other producers' products (Ekotrend Myjava, 2014). The company is one of seven processors in Slovakia manufacturing organic grain products in 2014 (Eurostat, 2015). Moreover the company has: 1) freight vehicles to assist distribution, 2) agricultural machinery for primary production, processing and packaging operations to add value, and 3) brokerage, consulting and advisory services.

The workforce of Ekotrend Myjava consists of 28 people. The company has a team culture which seeks to instill direct, honest and timely communication, mutual trust and cooperation.

The company produces its own brand of organic food under the Biomila® brand. The Biomila® brand product line has more than 40 products including teas, grains, flour, cereal, pasta, bakery products, dried apples, beverages and sunflower oil (Figure 3). In addition to its own line of products Ekotrend

Myjava handles about 800 products with different brands and countries of origin. However, the main production is spelt grain (Figure 4). Spelt is a historical grain which has higher fiber, gluten, vitamin and mineral content than standard whole-grain, soft wheat (U.S. Department of Agriculture, 2015). According to the company, spelt grain helps digestion and improves immunity while at the same time it has a pleasant nutty flavor.

Ekotrend Myjava's organic farming is registered by the Central Control and Testing Institute of Agriculture. It is regularly inspected by Naturalis SK, sro. This allows all certified products to bear the Euro-leaf green logo of the European Community (code BIO-E-002). The logo signifies the organic origin of the product and allows consumers to easily distinguish the product from conventionally produced products. All production and processing meets the quality system requirements of Hazard Analysis Critical Control Point (HACCP). And the company's Biomila® branded products have received the certified quality control system ISO 22000:2005 since 2010.

During the discussion with management, the students were told that the company uses various distribution channels which includes 80 partners. Ekotrend Myjava deals directly with supermarket retailers such as Tesco, Lidl, Metro, Billa, CBA, COOP Jednota, Kaufland and others. The retailers account for distribution of 65 percent of the company's sales. Specialized shops which handle bio products are another important point of sales for the company's products accounting for 27 percent of sales. The remaining eight percent of sales are processed through E-shops including its own. The distribution of products is partially supported by two freight vehicles owned and operated by the company. The distribution of sales is a good match to the places where Europeans purchase organic food. The main purchase points for Europeans are specialized shops (67 percent) and supermarkets (65 percent), but they also use the internet (7 percent) to purchase organic foods (Katsarova, 2015).

Most of the company's production and sales take place in Slovakia, although it also exports products to the Czech Republic and Bulgaria. Ekotrend Myjava is a leader for bio products in the Slovak market. However, there is strong competition from foreign countries such as Hungary, Poland, Czech Republic and others.

The company would seem to be in an excellent, growing market with Europeans spending 6 percent more on organic food in 2013 (Katsarova, 2015). However, it is difficult to meet the growing demand for the company's products as the demand for its inputs also increases as indicated by the price per ton of wheat increasing from 400 Euro in 2013 to 700 Euro in 2014. This situation was highlighted for a company in the United States in the article, "Hunger for Organic Foods Stretches Supply Chain" (Wall Street Journal, 2015). Also, price stability for organic products can be an issue (Su and Cook, 2015).

The students ended the second day of the joint study week realizing they had much work ahead of them over the next few days.

Days 3 and 4: Research, Analysis and Recommendation

Cases synthesize the core sequence of the agribusiness and agricultural economics degree by requiring students to draw on all previous courses and experiences. Cases, such as the one presented here, are true-to-life. Students must formulate a solution. It is here that the principles of agribusiness, economics, management and marketing are applied. Not only must the students identify a solution to the issues in the case, but their decision must be supported through rigorous analysis.

The objective of each case is to develop solid support for whatever decisions are made. The case functions primarily as a catalyst for developing skills in decision-making, policy analysis, strategy formulation, and communication.

Each team of students was instructed to prepare a presentation and report. The students were reminded they were providing the presentation and report to the management of the company. They also needed to frame the issue in the proper context so the management can understand the importance of the question at hand. Although there may be multiple issues, each team was to focus on a single issue. Once the issue was identified, each team was to make recommendations for how the company or institution should proceed. Each team was to support its recommendations with analysis and persuasive arguments.

Methodology and Analysis

The students evaluated the external environmental forces impacting Ekotrend Myjava so they may formulate recommendations to capitalize on strategic opportunities and contain any potential threats (David, 2013, page 63, and Healey, 1994). The analysis included four external forces: political, economic, social and technological (PEST). The PEST analysis is presented in Table 1.

Table 1. PEST Analysis for Ekotrend Myjava

Political	Social
Complicated procedure to obtain EU funds	Diverse demographics
Tax system and the high cost of maintenance workers	Fashion for healthy food
High labor costs	Increased awareness of nutrition importance
	Improving standard of living
Economic	Technological
Weak economic situation in Slovakia and Europe	Modern technologies are in the market
Economic trends	Reducing costs through use of more efficient energy technologies
Increasing input prices	

The students recognized as a political force that the European Union has funds to support activities such as those undertaken by Ekotrend Myjava. However, the process for obtaining these funds is complex. Moreover, the tax system and high labor costs were identified as impediments to the company's progress. A key economic force is the weak economic environment in the Slovak Republic and much of the rest of Europe. And more specific to Ekotrend Myjava is the relatively high price of its inputs. The social environment is viewed as a very positive force impacting Ekotrend Myjava. The consumption of healthy food is much in fashion and there is an increased awareness of the importance of quality nutrition. The consumption of a healthy, quality food diet is made possible by a general improvement in the standard of living among consumers in Ekotrend Myjava's market area. Finally, Ekotrend Myjava has the technological knowhow to produce quality inputs and products for the bio food market.

SWOT analyses were performed by the two teams and are summarized in Table 2.

Table 2. SWOT Analysis for Ekotrend Myjava

Strengths	Opportunities
BIO production and good product	High demand; Healthy food in fashion
Vertically integrated and many distribution channels	Produce inputs locally and abroad
Leader in market	Obtain EU funds
Good location, knowledge, experience, and brand	New products; Export possibilities; Agro tourism
Weaknesses	Threats
Capacities: small area of owned land; limited possibility to lease land	Import of products from other countries at lower prices; variable input prices
Older equipment	New companies will start to grow bio spelt grain and wheat
Dependence on trade suppliers and weather	Stronger legislation/law about controlling the production

Given the short period of time the students had to work on the case study, they were told to focus on one problem and develop one recommendation to correspond with one plan of action for the company to take. The students focused on the general lack of owned and leased land as a key weakness and, therefore, problem for Ekotrend Myjava. The problem arises because the company has an inadequate quantity of quality inputs, i.e., organic crops, necessary to operate under the Biomila® brand.

Results: Recommendation and Strategy

The students recommended Ekotrend Myjava locate organic farms in Slovakia and the EU to produce under contract the organic crops needed to meet the growing demand for the Biomila® brand. Their recommendation follows many research studies and findings that the interest in organic food has grown remarkably as consumers and marketers react to popular media about health and environmental effects of pesticides, genetically-modified organisms and food safety. However, the rising popularity of organic foods raises important questions of interest also to governments, growers, distributors, retailers, industry planners and marketers. Consumer purchase decisions are based on subjective experiences and perceptions of organic foods (Hughner et al., 2007, p. 2), including factors affecting consumer attitudes towards food products with sustainable attributes, such as Organic, Fair Trade, and typical products (Annunziata and Scarpato, 2014) and, moreover, consumer approach while buying food in retailing (Paluchová and Benda Prokešínová, 2014). Organic foods are occupying more of a central position in the global food market and in global consumption patterns. The global production of organic food is expected to grow substantially and the organic market is frequently regarded as one of the biggest growth markets in the food industry (Baker et al., 2004, Gifford and Bernard, 2006) with global sales increasing 374 percent from 1999 to 2013 (Sahota, 2015).

Contract production will address the problem of not enough production from the small amount of owned and leased land currently operated. Contract production as a strategy allows Ekotrend Myjava to seize the opportunity, at least indirectly, to produce inputs locally and abroad. Contract production could also accommodate geographic dispersion of organic crop production and, potentially result in less production risk from weather.

Instead of contracting farmers to produce organic crops, Ekotrend Myjava could consider purchasing organic crops in the open market. However, product specification contracts may have distinct advantages over open market purchases as a means of acquiring inputs (Jang and Olson, 2010). Jang and Olson discuss food product quality attributes that originate at the farm-level: sensory (e.g. appearance, smell and taste), health or nutrition, and process (e.g. organic products). These three quality attributes can be used to differentiate food products by processors and retailers. If food product quality is dependent on the quality of the inputs, processors have an incentive to control the design of the attributes. This can be better achieved by the use of production contracts instead of purchasing inputs in the open market. The advantage is driven by greater communication and price discovery costs of obtaining the unique product attributes in the open market. The lower communication and price discovery costs of production contracts are obtained by direct transfer of production specifications, i.e., quality, quantity, price and process, from the processor to the producer.

Food products produced by Ekotrend Myjava certainly have quality attributes that rely on quality inputs. For example, its

branded spelt grain products are proposed to have a different taste (sensory), better nutritional characteristics (health and nutrition) and are organically grown (process).

Ekotrend Myjava could also consider purchasing and leasing additional land instead of using production contracts to meet the growing demand for its products. However, it is difficult to purchase and lease land in the area. Even if land is located, it is difficult to raise investment funds to purchase additional land. Any investment funds raised could be more effectively used in the processing and distribution of organic foods.

Production specification contracts can be advantageous to both producers and Ekotrend Myjava. The benefits for producers are: 1) gain knowledge of organic crop production from Ekotrend Myjava, 2) assured market for producers, and 3) reduced output price variability. The benefits for Ekotrend Myjava are: 1) quality control of inputs through the product specification contract, 2) assured access to inputs to produce Ekotrend's high-value, Biomila® products, 3) less input price variability, and 4) increased geographic diversity resulting in less weather risk. These advantages are consistent with those identified by Jang and Olson and Eaton and Shepherd (2001).

The strategy of sourcing more organic crops with production contracts will allow Ekotrend to increase processing capacity. This will lead to an increase in products sales and availability which will strengthen its brand and increase visibility. Moreover, Ekotrend will be in a better position to explore additional market opportunities, ensure steady company growth, and maintain its position as a market leader in the production, processing and distribution of organic foods.

During the case study the market opportunity for healthier food products was also identified (Table 2). Support for such an opportunity is found in many studies in the literature. Kretter (2005) states that "the need of a product is the decisive factor in the purchase of the product and the need reflects the motives which stimulate the buyer." He also defines the predominant motive for bio-products purchase as protection of the environment, health reasons, healthy lifestyle, promotion of organic farming and no chemicals used in manufacturing (Kretter, 2005). Topics related to proper communication of not only bio-products but also sustainability issues can be found in many other research papers. Grunert (2011) states that consumers have, through their food choices, a major role in bringing about a more sustainable food production. However, this presupposes that the differences in sustainability are communicated to consumers, including eco-labelled products. Communication of eco and sustainability issues interconnected with a proper brand communication can bring positive effects to Ekotrend Myjava's products.

Conclusions

The case method is perhaps the most relevant and practical way to learn managerial skills (Hammond, 2002). The case method also contributes to the exchange of business experiences and enhances the attractiveness of educational programs. The business case can take many different directions. In the case presented here, AGRIMBA students from multiple universities

and countries were presented with the case that demand for Ekotrend Myjava's products exceeded supply. The students could have recommended increasing price and marketing efforts and/or increasing production efficiency of organic inputs among many other strategies. The students instead recommended the company use product specification contracts as the strategy to increase and assure availability of quality, organic inputs and permit the company to increase production of value added, branded organic products.

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Figure 1. Student visit to Ekotrend Myjava



Figure 2. Processing at Ekotrend Myjava



Figure 3. Biomila® Products



Figure 4. Biomila® Spelt Grain

RISKS AND COMPETITIVENESS IN AGRICULTURE WITH EMPHASIS ON WINE SECTOR IN CROATIA

Željka Bedek¹ – Mario Njavro²

¹ PhD student, zbedek@gmail.com

² University of Zagreb, Faculty of Agriculture, Department of Management and Rural Entrepreneurship,
Svetošimunska 25, 10000 Zagreb, Republic of Croatia, mnjavro@agr.hr

Abstract: International competitiveness, being a key objective of each economic entity, is at the same time significantly determined by the level of risk the entity is coping. Based on the assumption that risk management is directly linked to competitiveness in agribusiness, the scope of this paper is predominantly focused on the wine agribusiness in Croatia. The aim of this paper is to encompass available literature and transfer findings to interested parties, about risks and competitiveness in agriculture, with particular reference to the wine sector. Qualitative analysis of secondary data, descriptive i.e. monographic method, deductive method and comparison of available papers from the world and Croatia were applied in the paper.

There are very few companies in general, however, that tend to use their abilities to manage risks as a source of competitive advantage. These companies go beyond compliance or cost-controlling defensive approaches and take a more aggressive stance toward risk. They have realized that their risk management capabilities can be leveraged as a source of competitive advantage (Elahi, 2013). Current literature showed that such companies indirectly exist within global agribusiness. Examples of such companies in the wine sector could be found in Old World and New World wine countries. In regards with the mentioned, further research in the wine sector that would more directly link competitiveness and risk management and benefits that could be drawn from such “linkage” is needed.

Keywords: Agriculture, Wine, Competitiveness, Risks, Croatia

Introduction

In terms of the new Act on agriculture, the legislator has defined agriculture in terms of the strategic sector of the economy in Croatia, and has indicated that, as such, it is an integral part of other development strategies. As stated, among other objectives of agricultural policies are encouraging competitiveness of agriculture, inter alia through multi-purpose and technologically innovative production adaptable to climate, and technologically modernized food-processing industry (Official Gazette, 30/15).

International competitiveness, being the key objective of every economic entity, should be defined on both macroeconomic and microeconomic level. International competitiveness of a country is more than a national economy's aggregate comparative (relative) advantage (Korom and Sági, 2005). The OECD defines competitiveness as the ability to face competition successfully, to sell products that meet demand requirements and, at the same time, ensure profits over time or the aptitude to gain market shares, and most people agree that competitiveness is a relative concept which should be measured according to a benchmark (OECD, 2011, sec. source Latruffe, 2010).

Along with competitiveness, indispensable terms in literature are competitive advantage and comparative advantage.

Competitive advantage can be defined as “anything that a firm does especially well compared to rival firms”.

When a firm can do something that rival firms cannot do, or owns something that rival firms desire, that can represent a competitive advantage. (David, 2011).

Competitive companies could be described as the ones that are constantly improving their market position, that appreciate their core business and values, aspire to improve quality and perfect their products, organisation and other aspects of business, innovate, grow by merging and acquisitions, and invest in talents.

According to Neary (2002), comparative advantage always determines the direction of trade. A more simplified definition is offered by www.differencebetween.com, where comparative advantage explains how a firm may benefit because of the lower opportunity cost it has from selecting one alternative over the other. On the other hand, competitive advantage explains how a company may benefit by having a distinctive advantage over its rivals allowing them to produce at a lower cost and improve profitability.

Nowadays it is almost unrealistic to comment on competitiveness without mentioning risks. All the success factors and threats can also be potentially sources of risk, especially in agriculture.

There are very few companies, however, who tend to use their abilities to manage risks as a source of competitive advantage. These companies go beyond compliance or cost-controlling defensive approaches and take a more aggressive stance toward risk. They have realized that their risk

management capabilities can be leveraged as a source of competitive advantage. There are four major ways that a company can turn its risk management capabilities into a source of competitive advantage: keep serving when others cannot, seeking riskier businesses, excelling in everyday performance, and building a resilient image (Elahi, 2013).

A number of authors in their papers talk about types of risk in agriculture, among others Hardaker et al. (1997, 2002), Richardson et al. (1997), Harwood et al. (1999). According to Miller (2004), risks faced by agriculture have often been classified into such categories as production, marketing, financial, legal and human risks. An alternative and possibly more useful taxonomy is to categorise risk as either operational risk or strategic risk. The Agriculture Risk Management Team (ARMT) of the World Bank (2011) recognised the following risks: weather risks, biological risks, price risks, labour and health risks, and policy and political risks.

Very similarly, Jaffee et al. (2010) recognises major risks facing agricultural supply chains: weather-related risks, natural disasters (including extreme weather events), biological and environmental risks, market-related risks, logistical and infrastructural risks, management and operational risks, public policy and institutional risks and political risks.

Other than risk identification on a scientific level, risk management and risk management tools have been noted throughout the expert and institutional segment of agriculture: FAO (2008, 2013), European Commission (2001, 2005), United States Department of Agriculture (2013), World Bank (2005, 2010, 2011).

According to the United States Department of Agriculture, O'Donoghue (2013), farmers have many options for managing the risks they face and most producers use a combination of strategies and tools. Some strategies deal with only one kind of risk, while others address multiple risks. Following are some of more widely used strategies: enterprise diversification, financial leverage, vertical integration, contracting, hedging, liquidity, crop yield insurance, crop revenue and household off-farm employment or investment.

Based on the assumption that risk management is directly linked to competitiveness in agribusiness, the aim of this paper is to encompass available literature and transfer findings to interested parties about competitiveness and risks in agriculture, with reference to the wine sector. The reason for analyzing wine sector is its affiliation to highly competitive industry.

Materials and Methods

The material includes an overview of the available recent literature on competitiveness and the use of risk management tools in agribusiness.

The paper is divided into four parts: competitiveness in agriculture, competitiveness of the wine sector, risks in agriculture, and risks in wine sector. Where possible, literature was considered from a theoretical and an empirical point.

Qualitative analysis and descriptive synthesis method of research papers for agriculture and wine sector in Europe and

world have been used in this paper, with reference to research papers in Croatia.

Results

Competitiveness in Agriculture

Competitiveness of the agricultural sector (in terms of farm or commodity competitiveness) has so far been investigated more frequently than that of the agri-food sector. Existing literature has focused mostly on price or cost competitiveness. The non-price component of firms' or farms' competitiveness is usually forgotten, although several authors stress it is an important aspect in gaining market share and sustaining profits. Finally, the issue of government intervention could be given more attention in the context of trade negotiations and agricultural policy reforms. (Latruffe, 2010).

In their study, Korom and Sági (2005) highlighted some financial indicators that could fit measuring the performance and competitiveness of agricultural enterprises in Hungary. Liquidity, working capital, turnover of assets, capital structure, debt repayment, productivity and profitability have been considered in the scope of their study. Given the importance of profitability, there is all the more need to better understand the components of competitiveness, and their impact on the economy, especially on agriculture. In the discussion of their paper, Korom and Sagi (2005) cited a number of authors. Among these are Bureau and Butault, (1992) who indicated that in agriculture, competitiveness is seriously determined by the input prices and by the subsidies. Korom and Sagi also cited Erdész et al. (2002), who indicated that within regional integration, the competitiveness of the agriculture is affected by indicators mainly associated with innovations, financial resources, productivity, vertical coordination, subsidies and market regulation. They can be supplemented by marketing, information and integration techniques.

Besides financial indicators, competitiveness (in horticulture) can be sustained and enhanced by taking care of the environmental and food safety standards. The example is Yercan and Isikli's paper on competitiveness in Turkish horticultural sector (2006).

In addition, legal environment could impact competitiveness.

According to Menghi et al., within the EU the efficiency of the solutions selected to conform to obligations imposed by laws can potentially impact competitiveness. This occurs both at farm and sector level and may also create differences amongst regions. Menghi et al. (2011), by quoting Henson and Casswell (1999), describe these effects with respect to food safety regulations, and how the latter can be strategically beneficial for farms and firms. Costs will differ according to efficiency in compliance and depending on firm size, existing standards of operation, and cost structure. A second type of benefit is linked to trends in consumer demand. The focus of consumers in agricultural and food markets can shift from price-based to quality-based competition.

Agriculture in Croatia following its independence shows an increase in utilised area, but production is still below pre-

war levels and the results with unsteady and modest value. Harmonization with Common Agricultural Policy (CAP) standards is slow; big steps have been made in establishing new institutions in agriculture and preparing adequate legislative framework, so there are no significant formal differences between the Croatian and European agricultural policy. However, European agricultural policy models are causing problems. There is a daily debate about the low degree of self-sufficiency of domestic production, low competitiveness and uncontrolled import of farm products. Farmers still often expect the government to organise the production and guarantee purchase prices as those in the former, socialist system (Franić, Mikuš, 2013).

Competitiveness of Wine Sector

To be successful in current global wine trade, Old and New World locations need to create a unique bundle of product characteristics that add value to consumers. Successful Old World producers provide an example of constant improvement of product performance, create appropriate logistics in retail distribution channels, and create a symbolic appeal for its products. Successful New World producers engage in more consumer-oriented approaches to tactical decisions (varietal selections, market-oriented innovations and updating tastes that appeal to young and informal audiences), and understand the growing role of media or key opinion makers. The super-premium wine producers in this study attempted to integrate these concepts where possible but found limitations based on firm size and availability of human knowledge specificity. Therefore, an implication of the findings in this study is the issue of getting others on board to create a more collective effort and benefits (Harrington and Ottenbacher, 2008).

Alonso et al. (2014), in the findings of their research, point out that diversifying and entering new markets, especially due to domestic competition are respondents' main reasons for embarking in exports, while unfavourable currency exchange, issues of trust, or entry barriers are key challenges many of them face. Their preliminary study investigates a group of predominantly micro, small, and medium wineries from both New and Old Worlds of wine. Furthermore, despite the relatively limited wine production of most participating wineries, respondents perceive a necessity to be present internationally. Indeed, rather than fitting into a specific business model/cycle, the current complex business environment is triggering export strategies among entrepreneurs.

The general aim of the study conducted by COGEA S.R.L. (2014) was to provide background knowledge on key factors and mechanisms behind the development of competitiveness of European wines, and to assess how to further improve it both inside the EU market and in main third country markets vis-à-vis the competition from wine-producing third countries. Also the study is well connected to risk.

The following problem-areas were identified: 1. market access; 2. decision-making process of economic actors; 3. product adaptation to markets.

1. Market access: the (widely shared) expectation of increase in the turbulence on the international wine market leads to the first issue, that of market access. All types of initiatives (policy, strategic and operational) aimed at facilitating market access generate competitive advantage.
 - a. The first strategic level is the extension of the "market-portfolio". Expansion to new markets or to non-traditional markets (e.g. Republic of Korea, Algeria, Philippines, Mexico, etc.) would have a three-fold purpose: to reduce the risk associated with sudden economic changes and resulting from implementation of competitive strategies by competitors on their traditional markets, particularly in mature markets; to counter the expansion strategies of some New World Countries (in particular, Chile and Australia), notably in new markets; to ensure presence (with the highest possible relative market share) in markets where wine is at the introduction or development stage of its life cycle. High market shares and strong growth prospects (though expectations would not be for huge volumes) are likely to generate increasing returns on investments.
 - b. The second level is political-institutional and concerns the signing of bilateral preferential trade agreements with third consumer countries, also (but not only) with a view to expanding the market portfolio.
 - c. The third level is access to distribution channels, and therefore it regards influential key factors of competitiveness for which action may be to some extent stimulated by the public authority.
 - d. The fourth level regards wine businesses cost structure and the possibility to grant higher margins to distributors. This directly leads to the possibility (in some markets, and only for wines positioned in the Super and Ultra premium segments) to transfer wine in flexitanks and to relocate bottling operations in the consumption markets.
2. The decision-making process of economic actors: the analysis suggests that in the future wine demand will probably be more complex and sophisticated than at present in the various country-markets, and that increased market turbulence will lead to more intense rivalry between producers of wines of different origins. The ability of European wine businesses to react and adapt to changes in the competitive environment foreseeable to the horizon 2025 also entails an improvement of the conditions that facilitate the decision-making process of the actors.
3. Product adaptation to markets: this problem-area leads directly to the issue of strategic decisions concerning the product on the different markets. In turn, this involves different and politically sensitive aspects.

Using a cluster approach, Rebelo and Caldas (2011) in their paper present the case of the most important Portuguese wine region, the Demarcated Douro Region (DDR), which is a strong reference of terroir and known for producing Port wine. To increase its competitiveness in the world wine market, the DDR needs to evolve from an organised to an innovative cluster.

Cetrángolo et al. (2007) analyse the Argentinean wine industrial environment in relation to the characteristics of the United Kingdom quality wine market. Authors suggest that according to the performed investigation, it is possible to describe each determinant of the Porter's Diamond as follows:

- Conditions of the production factors: The Argentinean wine industry has high comparative advantages thanks to the very good agro-ecological conditions that are present in the producing regions and that allow to cultivate a great diversity of varieties with no or minimum use of agrochemicals, thus permitting to obtain high quality production at a low cost. The competitive advantages of the production factors are based on the presence of qualified human resources working in the sector, on the labour force that is cheaper than in competing countries and on the incorporation of hi-tech in all the links of the chain,
- Demand conditions: [...]The buyer's negotiating power plays an important role within the demand conditions, since the high concentration especially of the supermarket chains, the proliferation of distribution brands, the high degree of professionalism and the buyers' needs,
- Firm rivalry: The firm rivalry increased because of the high number of wineries going into business. Its importance might be reduced by identifying niches for the differentiation of products or by selling at the highest price range where the competition decreases,
- Related and supporting industries: The suppliers of technological services, especially enologists, agronomists and communication and marketing experts have strongly improved their performance in the conversion of the vineyards for the quality wine elaboration. In order to conclude the analysis of the industrial sector in relation to the UK quality wine market, it is important to underline that the high negotiating power of buyers is the main competitive force that must be resisted.

Tipples (2010) has explored the fragile link between a medium sized New Zealand wine business and a major overseas supermarket chain, and how a smaller business can survive market disappointments such as reduced supply contracts. Establishing a successful long-distance supply chain for a New Zealand wine does not guarantee long-term business success. When that success was threatened by the supermarket reducing its order unilaterally the company concerned responded by restructuring its business operations to overcome a performance gap. A further chain has been developed to another UK based supermarket chain, ASDA, to move bulk wine and significant inroads have been made into the US market place through Total Wine & More, a US distributor/retailer. Long-term relationships played key parts in all these developments. Establishing and maintaining customer contact and loyalty through regular interpersonal contact and close monitoring of the supply situation has had a central role.

Sustainability is becoming increasingly important in supply chains, particularly in those that function in highly competitive industries. The findings show that managers within the New

Zealand wine supply chains are trying to find ways to leverage sustainability-related competencies for competitive advantage in what is now a highly competitive industry. For this research, definition of sustainability is limited only to the environmental dimension (Flint and Golicic, 2009).

Taplin (2006) has examined the changing competitive landscape in the wine industry, focusing upon how premium Napa valley producers are responding to such changes. Wineries identify the growing concentration and consolidation amongst distributors and domestic US producers; increased foreign competition, particularly from Australia; and the trend towards homogenised taste following the increased power of numerical wine ranking surveys as principal concerns that they face.

Risks in Agriculture

Good risk management involves anticipating potential problems and planning to reduce their detrimental effects. Simply reacting to unfavourable events after they occur is not good risk management (FAO, 2013). The goal of risk management policies is not to support income, but only to reduce fluctuations of income or its components. EU policies in the framework of the CAP (The Common Agricultural Policy) have a major impact on farmers risk, even if their main goal may be income stabilisation and not risk reduction (i.e. market intervention, direct payments, rural development measures providing incentives for on- and off-farm diversification) (European Commission, 2001).

According to Meuwissen et al. (2001), price and production risks are increasing and governments increasingly encourage agriculture to find private market solutions for catastrophic risks like floods and epidemic diseases. They concluded, on both theoretical and empirical grounds, that risk-sharing strategies do provide such opportunities. The empirical results are based on a questionnaire survey among Dutch livestock farmers. Having risk-sharing markets is important for improving the efficiency of the farm sector.

Székely and Pálkás (2009) compared American and European Union (Germany, Hungary, Poland, Spain and the Netherlands) farmers' risk management practices based on various surveys. One of the most important findings of this study is that American farmers considered changes in agricultural politics as being more important than their EU counterparts, although price variability is a major factor for both American and European farmers. The study also revealed that hedging is far more popular among US farmers than with European ones. However, after viewing both the US and European participation in government programs and engaging in diversification are important risk management strategies both in the USA and in the EU. The study also indicates that the majority of both US and European agricultural producers avoid using debt for financing their operations and try to use other solutions like having cash reserves to solve financial challenges.

Benni and Finger (2013) investigated how agricultural policy reforms, including market liberalisation and market deregulation, have influenced gross revenue risk (Swiss dairy

producers, period 1990-2009). Prices were the main contributor to revenue risk, even if the importance of yield risk increased over time. Market liberalisation and market deregulation have reduced natural hedge at the farm level.

Having effective risk-sharing markets is important for improving the efficiency of the farm sector. Governments should be responsible for helping the formation of risk sharing markets. The key is to turn risks that have been previously considered non-diversifiable into diversifiable risks that can be spread around the world. Empirical part of the research was carried out in the town of Gaoyangdian in Pingyu County, Guandu in Zhongmu County and Daling in Zhengyang of Henan Province (Aimin, 2010).

The Deutsche Bank Research (2010) demonstrated that public policies always crowd out private risk management instruments. Moreover, they hinder the discovery of the natural market price, potentially preventing necessary adjustments to a changing market environment. An important role for public policy is, however, to empower farmers to take their own informed risk management decisions among a diversity of instruments and strategies.

Swenson (OECD, 2000) has indicated in his article that the evolution of the food chain from a competitive industry characterised by many participants at all levels to an increasingly integrated system provides a unique risk management opportunity to those who have market power. In the absence of effective intervention by public institutions, highly integrated firms are able to transfer the majority of unacceptable risk to the ends of the chain; in particular, to farmers, ranchers and retail consumers.

Whole-Farm Risk Models and Enterprise Risk Models in agriculture is subject of interest for a number of authors (Lien and Hardaker, 2001, Bewley et al., 2010; Reynolds et al., 2006).

In their study, Heyder et al. (2010), aimed at providing a better understanding of the management of price volatility in the agribusiness sector. The survey of German agribusiness companies shows that a clear majority of respondents perceive increased market volatility. All in all, the study reveals a remarkable gap between the wide spectrum of – sometimes highly developed – risk management instruments available and the, at least in many cases, comparatively simple risk management strategies (for instance long-term contracts with suppliers and customers) currently prevailing in the agribusiness sector.

Leat and Giha's (2013) paper examines one of Scotland's major pork supply chains to identify

the key risks and challenges involved in developing a resilient agri-food supply system, particularly with regard to primary product supply, and to show how risk management and collaboration amongst stakeholders can increase chain resilience. They suggest that reduced supply chain vulnerability to risks arose through horizontal collaboration amongst producers, and vertical collaboration with the processor and retailer. Producers improved market and price security, and pig performance. For the processor and retailer, the collaboration generated greater security of supply of an assured quality,

improved communication with suppliers, and reduced demand risk as they could assure consumers on quality, animal welfare and product provenance.

To minimize high levels of investment and risk inherent in their ventures, entrepreneurs developed an innovative organizational form: the New Generation Cooperative (NGC). This organizational form attracted many investors through the creation of investment incentives inaccessible to traditional forms of producer group action. After two well-publicized, profitable NGC ventures, farmers decided to pursue a similar strategy for several of the crops in their rotation. They joined together to identify opportunities to add value to a variety of their crops—primarily sugarbeets, corn, and soybeans. Examples are from Minnesota, USA (Burruss et al., 2008).

The paper by Dorfmana and Karalija (2008) utilized a panel data of Georgia farmers (USA) to investigate the role of a variety of factors on the hedging (three major crops: corn, soybeans and cotton). Some of the conclusions are that habits play a quite significant role in hedging decision for many farmers, information source are powerful explainers of hedging decisions. Other important factors in farmer hedging decisions include attitude toward technology adoption, education levels, farm profitability and ratio of acres owned to acres farmed.

The focus of Angelucci and Conforti (2010) is on the value chain of stakeholders (fruits, vegetables and spices) in Small Island Developing States - part of African Caribbean Pacific country group. Results reveal limited ability to handle price and production variability due to lack of both horizontal and vertical coordination along value chains, reduced use of support services, notably credit and underinvestment in equipment. Promoting light forms of vertical and horizontal coordination, such as production contracts and producers associations, as well as value chain - based credit and finance may address some of the issues highlighted.

Matić et al (2010), in their paper, taking into account market risk for the observed companies in Croatia, concluded that most companies analyse risks using “the rule of thumb” or don't analysis market risk, because, as they believe, costs exceed the benefits. Pankretić (2011) in her diploma paper deals with risk analysis in cattle fattening in Croatia.

Risks in Wine Sector

The aim of Duquesnois et al. (2010) paper was to investigate the competitive strategies adopted by French wine producing firms in a crisis context. The preferred strategic choice of the majority of investigated firms is the combination of “niche + differentiation” strategies. Viviani (2006) presented an original risk protection mechanism implemented by the federation of Cote du Rhone (Inter-Rhone) wine producers to build up a wine stock, or “reserve”, so as to protect their incomes against fluctuation in prices and production.

Gugić et al. (2008) deal with the viticulture/wine of Dalmatia sources of risk and risk management strategies. Among the highest-rated sources of risk by respondents are health care, climate impacts on production and the possibility of product placement. Relatively unimportant are score of

misappropriation of assets and products, changes in interest rates and repayment ability and environmental policy. As the most important strategies for managing risk in viticulture and wine production, respondents chose use of their own land, constant learning and information and irrigation.

For the Slavonia and Baranja region, Njavro et al. (2005) explore sources of risk and risk management at fruits and viticulture-wine farms. Among the highest rated risk are the health of family members, climate risks and market risks. Risk management strategies were investigated with respect to their importance and use. The following most important risk management strategies were selected: application of appropriate technology, continuous learning and production on their own land. Two-thirds of respondents do not use insurance and as the main reason, they state the amount of the insurance premium.

Njavro et al. (2009) have connected the analysis of risk and uncertainty with the influence of climate risk in order to establish an effective system of risk management in the wine sector and to develop and integrate innovative risk management strategies in business strategy. Njavro et al. (2005) considered on the basis of international experience, primarily from the European Union and the USA, that work on the development of the insurance sector in the direction of covering multiple sources of risk should be done. However, based on others' experiences, the development of agricultural insurance should be based on private initiative and be commercially acceptable and economically viable.

Discussion

Starting from the assumption that the wine sector is a highly competitive industry, and the conducted studies, emphasis in elements of wine competitiveness is placed precisely on the producers' approach and 'behaviour' on the market (market access) and the relationships within the supply chain.

An indirect link between competitiveness and risk can be found in competitiveness in the wine sector.

A number of authors who deal with issues of competitiveness in wine, and it is possible to recognise the link between competitiveness and risk management strategies in the very content of their papers. Current literature showed that such companies indirectly exist within global agribusiness. Examples of such companies in the wine sector could be found in Old World and New World wine countries. In regards with the mentioned, further research in the wine sector that would more directly link competitiveness and risk management and benefits that could be drawn from such "linkage" is needed.

In the area of risk management, a number of authors and institutions emphasise the importance that policies, government programmes and public institutions have on risk management for farmers. Risks in agriculture are the subject of a range of exact studies. From the conducted studies, it can be concluded that farmers are mostly implementing a set of different strategies, both production and market strategies, independent of the type of agricultural production.

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CROATIAN WINE MARKET, SUPPORT POLICY AND SPECIFIC OBSTACLES TO WINE EXPORTS

Jakšić Lucijano¹ – Njavro Mario² – August Hrvoje³

¹Ph.D. Student, Faculty of Agriculture, University of Zagreb, Croatia

²Associate professor, Faculty of Agriculture, University of Zagreb, Croatia

³Mag.ing., Ireks Aroma Ltd., Zagreb, Croatia

Abstract: In this paper, analysis of Croatian wine sector in period 2006-2013 is conducted through the record of wine production, exports and imports together with Government support measures. In the light of Croatian EU membership together with opening of EU wine market and global wine market, recommendations for further discussion of support measures for small and medium winemakers are given.

Keywords: Croatian wine market, Government support, export wine markets.

Introduction

Wine making sector is an important part of Croatian Agriculture with long tradition and market identity especially through autochthonous varieties and significance in tourism, agricultural income and employment. Croatia signed the Stabilization and Association Agreement (SAA) with EU in 2001 that came into force in 2005. SAA includes gradual abolition of customs duties in mutual trade therefore postponing total exposure of Croatian economy to highly competitive products from EU. To support domestic wine production, Ministry of Agriculture (MoA) among other measures initiated Operational Programme (OP 2004) of Rising Perennial Plantations (MoA, 2004a). Program had a goal to encourage farmers (winemakers and fruit growers) to invest into nurseries, vineyards, and orchards rejuvenation and planting. Goals for wine sector in particular, were to raise productivity, quality, and competitiveness in general. OP 2004 was revised in 2008 with aim to additionally encourage grape and wine producers to plant and rejuvenate vineyards. Besides already mentioned OP 2004 with aim to support planting of 13 thousand hectares of new vineyards, Croatian Government has a history of support to winemakers in planting new vineyards (MoA 2002), capital-intensive investments support programmes for processing machinery and equipment (MoA 2004b), IPARD program (Measure 103 –processing and marketing), and in 2014 „Wine Envelope 2014-2018 –National assistance program for wine industry and viticulture with budget of 11.8 mil. Euro/year (MoA, 2015). At Croatian regional level, Istrian County had from year 1994 a separate OP plan of rising long-term plantations of vineyards and orchards (Pribetić et. al., 2006). In the meantime some other Croatian Counties and local municipalities started and maintain similar practice (just

to mention few: Koprivničko-križevačka County, Zagrebačka County, Town of Omiš, Town of Kaštela, etc.). In grape and wine production, climate volatility has a strong impact factor. Additional impacts come from sectorial support programs in the macro environment.

Material and methods

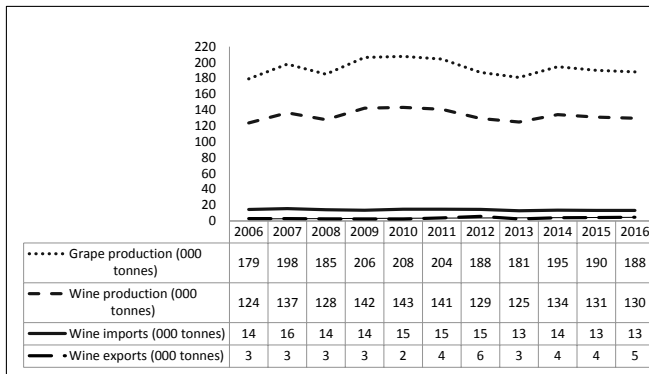
The research is based on analysis of the secondary resources of official statistical data from Croatian Bureau of Statistics, processed statistical data obtained from Croatian Chamber of Economy (CCE), public open data on internet and commercial research available via pay per view (Wine Australia, 2011).

Results and discussion

Production, imports and exports

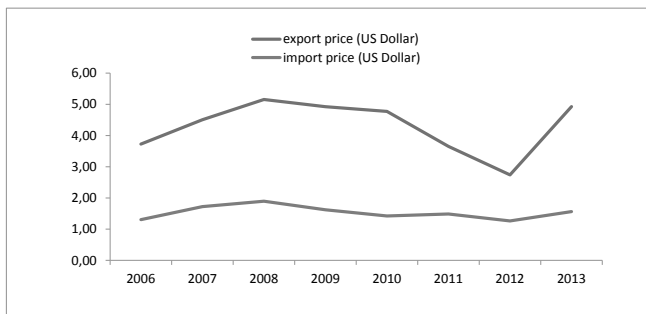
Croatia has total vineyard surface around 27.9 thousand hectares (CCE, 2014). Rough calculations of the official statistics show that in period 2006-2013 total vineyards surfaces in Croatia (despite the planting efforts) decreased by 10.4%, and wine production increased by 0,9%. Total number of registered grape producers in Croatia is 59.998 (official data available for 2009), out of which 58.370 (97.3%) is cultivating less than 2 hectares (CCE, 2014). For comparison, in France average producer vineyard surface is 8 hectares (FWG), Spain 3.34 hectares (VDE), Italy 1.5 hectares (Caffagi and Iamiceli, 2011) and EU total is about 2 hectares per producer (Traynor and Gow, 2007). By observing wine imports, exports, grape and wine production for eight years in a row and linear trend for period 2014-2016 (Figure 1), Croatian wine market looks generally stagnant.

Figure 1: Grape and Wine in Croatia 2006-2013, and linear trend 2014-2016 (CCE, 2014)



With aim to cope with the stagnant situation on the wine market, Croatian winemakers formed National Winemakers Association (Udruženje vinarstva Hrvatske) in 2011, with main goals to promote Croatian wines and create a brand of Croatian wines in Europe and worldwide.

Figure 2: Exports and Imports of Wine, Croatia, 2006-2013



Total wine market size in Croatia in 2013 was around 140.319 tones (CCE, 2014). Most important grape varieties for domestic wine consumption and exports by vineyards surface (official data available for 2009) are considered: 22.3% - Graševina, 8.1% - Plavac Mali, and 7.4% - Malvazija Istarska. (CCE, 2014).

By rough calculation of export and import prices (Figure 2), Croatian wines achieve 2.8 times higher average export price calculated per 1 kilogram (4.30 US Dollar (USD)) than wines imported to Croatia (1.54 USD) for period 2006-2013. For example, in year 2013, French wine is imported to Croatia at average price 11.45 USD/kg, Spanish wine at 4.99 USD/kg, Italian wine at 3.57 USD/kg (CCE 2014). Bottom line is that in 2013 most important “clusters“ of countries importing Croatian wines above average price of 4.30 USD were: CEFTA and EU 15 countries. Same cluster of markets also exceed 80% of total exported wine quantities in 2013. Regarding imports to Croatia (2013) over 84% of wine is imported from CEFTA cluster of countries for average of 1.06 USD/kg of wine (CCE 2014).

Obstacles to wine exports

Categories of barriers to exports of wines and imports of wines may be divided into following types (1-3 according to Papalexioiu, 2009):

1. Export markets policy barriers,
2. Logistics and financial barriers,
3. Marketing and promotion barriers,
4. (Lack of wine) drinking culture,
5. Type of production (market-driven or production-driven) (Barclay, 2001)

Market policy barriers (1) often include additional costs (import tariffs) and bureaucracy procedures. Tariffs vary from country to country (e.g. India's federal MFN (most favored nation) rate at 150% (EC, 2015) and e.g. State of Andhra Pradesh additional rate of 170% (Decanter, 2013)). Tariffs and procedures may be generally specific in unions of countries, making common standards across the internal market e.g. European Union or exist despite common market or free trade agreement targeting specific problem e.g. Systembolaget Sweden (SB, 2015) and bioterrorism e.g. USA (TTB, 2015). Policy barriers also include market specific wine standards (additives, allowed processing aids, labeling requirements, alcohol content standard, compulsory specific label statements/markings) (AGWA, 2011). For example Brazil allows maximum of 0.2g/L of chlorides (Guy, 2013) what may (in best case) be connected with terroir (OIV, 2010) or with oenological practice of curing wine from hydrogen sulphide (H_2S). „Chlorides criterion“ may be in favor of wines of uniform technological production approach. Switzerland emphasizes maximum concentration of histamines in wine <10 mg/L what may be directly connected with red wine technology and potential of enhanced allergic effect when paired with (sea)food meal. Primary sources of histamine in wine are microbes (MASAS, 2015, ICUS, 2015), foremost of them yeasts and bacteria (Szymanski, 2010) and in particular indigenous microbes like *Lactobacillus* (OBP, 2015) and *Pediococcus* species (AIM, 2008). Producers who prefer use of indigenous yeasts in search of unique and regional character of their wine, over consistence in quality (Fleet, 2008) characterized by using selected strains of yeasts may be affected by Swiss wine standard. Russian Federation emphasizes maximum content of volatile acidity in imported wine of 1.1 g/L. Low content of volatile acidity in this sense should be maintained during the whole production process, starting from prescribed procedures for grapes (in harvest) to establishment and maintenance of prescribed conditions in wine cellars (especially at areas with high seasonal temperatures) (Paleka, 2015). European Union limit on total sulphur dioxide (Guy, 2013) in wine is “ringing bell“ for exporters to less demanding export markets (e.g. Canada) to acquire other means of oxidation protection practices in near future. South Korea does not allow technologically fastest antioxidant agent -ascorbic acid what is equally replaceable with other antioxidant agents like „gall tannins“ or „glutathione“ (Charest, 2013) but at higher costs. Japan wine standards do not allow presence of „cupric sulphate“ ($CuSO_4$) what may be obstacle for exporters from Europe,

where CuSO₄ may come as residue from “Bordeaux mixture” (traditional fungicide) treatment in vineyard (Wikipedia, 2015) or in case where CuSO₄ is used for wine curation from H₂S. By wine standards of Peoples Republic of China it is forbidden to use tartaric stabilisers: „metatartaric acid“ and CMC (carboxymethyl cellulose) in wine production. Contrary, use of more expensive „ion exchange resin“ (Mira et al., 2006) or traditional but insecure procedure of „cold stabilization“ is allowed. In addition, China forbids beverage preservative -DMDC (dimethyl dicarbonate) in wine, at same time DMDC is confirmed to be safe in EU and USA.

Logistics and financial barriers (2) cause extra costs and are also country specific. Significance of transport costs might cancel effects of e.g. preferential rates e.g. EU to e.g.: Mexico at 0%, Chile at 0%, Hong Kong at 0%, South Korea at 0% (EC, 2015) or may aggravate whole process of export venture, e.g. Brazil rate for EU originated wines at 27% and possible delays (2-3 weeks) for freight customs clearings at local temperatures around 40°C (AGWA, 2011).

Marketing and promotion barriers (3) concern external and internal factors like: -competition, -lack of marketing plan or/and budget and -lack of interest for exports (Papalexioiu, 2009).

Drinking culture (4) may be a key factor considering export decision. India is world’s second largest population but with estimated total wine market size of just 10 million liters (AGWA, 2011). China has an annual tea consumption of 400 cups per capita (USC, 2010) and due to the cultural symbolism around 74% of wine consumed is red wine (AGWA, 2011). Purchase age for wine in e.g.: Austria, Luxembourg, Moldova, Portugal, Switzerland, Georgia, Morocco (forbidden for Muslims) is 16, in some states of India 25, completely illegal in Saudi Arabia. Kuwait, or permitted to consume privately over age of 21 having personal liquor license in Oman (ICAP, 2015).

Type of production (5) may influence dynamics or cause delay in export activity. Production-driven Croatian wineries still may count on high 85% of domestic customers who prefer buying domestic wines over imported (Puls, 2005). On the other hand, market-driven wineries think from a customer’s point of view - identify customer needs, search for fulfillment of these needs at a profit (Barclay, 2001), without losing sight of the competition.

Figure 3: SWOT analysis of the Croatian wine market

Strengths	Weaknesses
<ul style="list-style-type: none"> • Autochthonous varieties • Internationally competitive wine quality • High export wine price • National winemakers association with marketing program “Vina Croatia -Vina Mosaica” 	<ul style="list-style-type: none"> • Limited quantities • 27.9% of vines with age over 30 years* • Production costs • Lack of distinction on foreign wine markets due to the inconsistency in strategic marketing • Lack of business association covering specific/priority needs of the sector

Opportunities	Threats
<ul style="list-style-type: none"> • Common European market access • market penetrations within the EU trade agreements with third countries • EU origin image perception with third countries • Upgrade of existing institutional support to overcome export market barriers for wine exporters • Market development in expanding domestic tourism 	<ul style="list-style-type: none"> • Continuous loss of domestic market from cheap wine imports and competition in general • Exposure to the outcomes of the EU policy/es with third economic and political partnerships • Climate changes

* Basic surveys on vineyard structure 2009 (CBS 2011)

Conclusions

To preserve, promote and sustain wine production in Croatia, Croatian government will have to develop advanced solutions of support to Croatian wine producers or to support wine producer associations to cope with stagnant wine market, negligible export activity, and mostly old vineyard plantations.

Croatian wine in general, has technological potential to be exported to markets with common wine standards (EU wine market standard) also valid in Croatia. Difficulty at same time is that these markets are ruled by “Old World Producers“ like France, Italy and Spain and „New World Producers“ like Australia, Chile and Argentina, offering wine at all price ranges. In this sense, market penetration and market development for Croatian wine producers will depend on product pricing, results of past and further joint promotional strategy(-ies).

Strategic orientation of Croatian wine exports to third countries wine markets at wishful prices may sound attractive. In such case Croatian winemakers may count to be perceived to have quality product from Europe, nevertheless, penetration to these markets is highly dependable on specific wine standards for each market separately. Planning of such business model offers more chances but at same time is highly dependable on targeted oenological expertise or support, market research, pricing, and institutional support. Targeted joint export actions towards “easier” third markets may show as penny-wise campaigns and lucrative ongoing, therefore directly affecting sustainability for all wine business sizes in Croatia.

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GRADUATE STUDENTS' OPINIONS ABOUT ENTREPRENEURSHIP AS AN EMPLOYMENT OPPORTUNITY

Josip Juračak¹ – Marko Tica¹

¹University of Zagreb Faculty of Agriculture, Svetošimunska cesta 25, Zagreb, Croatia
jjuracak@agr.hr

Abstract: One of the most unwanted and unavoidable consequences of the economic recession is the high rate of unemployment. Graduate students in Croatia are faced with lack of employment possibilities, and for some of them the self-employment looks like a good solution. In this paper, we investigate attitudes and intentions of graduate students at the University of Zagreb Faculty of Agriculture regarding to self-employment. Most of the surveyed students are in the age between 21 and 25 years, and they have already got some kind of knowledge about entrepreneurship during the formal education. In addition, majority of them have the experience of part-time jobs. The Theory of Planned Behaviour (TPB) model was used to find out to which extent students' attitudes and experience influence their expressed self-employment intentions. The results revealed that Zagreb students' scores are close but somewhat lower than the same scores found in the comparable study from Australia. This goes for the investigated variables: (1) previous entrepreneurial experience (PEE), perceived desirability of self-employment (PDSE), perceived entrepreneurial self-efficacy (PESE) and self-employment intentions (SEI). It was found that the score on the PEE is significantly related to scores on the PDSE ($p=0.000$), and PESE ($p=0.000$), which means that the experience positively influence respondents' attitudes on self-employment and self-efficacy. There is also a statistically significant difference in the on the SEI with respect to the PDSE (ANOVA $F=9.804$, $p=0.000$): respondents that consider self-employment more desirable expressed higher intention to perform it. The PDSE was found as the most influencing model variable in regards to the self-employment intention. The results points out the importance of previous experience, role models and positive attitudes towards self-employment in the process of the entrepreneurship development in young, educated population.

Keywords: entrepreneurship, self-employment, students, theory of planned behaviour

1. Introduction

In the conclusions from May 2014, the Council of the European Union clearly states that the youth unemployment has the strong negative impact on society while entrepreneurship based on creativity and innovation of young generation steer the economic growth. The entrepreneurship offers self-employment possibility and therefore, it helps fighting the low rate of employment in youth. (Council of the EU 2014, 18, 19).

The Eurobarometer Survey showed a higher preference for entrepreneurship among young people. Although 37% of the interviewed young people prefer self-employment to employment in others, 58% of them have never thought about starting the own business. Compared to the USA, more young Europeans believe they do not have necessary entrepreneurial skills and they are more afraid of failure in business. It is sure that positive social climate is necessary to stimulate the self-employment together with supportive economic conditions. It is the official opinion of the Council of the European Union that entrepreneurship skills and attitudes develop through formal, non-formal and informal education. They must be stimulated since the early age.

It seems that the EU is missing people with readiness to start

new businesses, and the growth of new enterprises is rather slow. The number of self-employed with employees dropped for -7% in the period 2008-2011. The rapidly growing new companies (i.e. gazelles) with 10 or more employees account for about 0.58% of employment in the population of active enterprises in the EU. (Council of the EU 2014, 19)

According to the Eurobarometer survey on entrepreneurship, propensity to self-employment in the EU is 49%, which is lower than in the USA (55%) and China (71%) (Stawińska 2012). In the same time the image of entrepreneurs is also the lowest in the EU, and especially in the Eastern and Central Europe Countries.

In his paper about entrepreneurship determinants, Schmiemann (2012) states that entrepreneurship is the creation of economic activity based on the blend of an individual risk taking, creativity, and need for achievement or reward. It is the process which can induce macroeconomic changes in the form of higher employment.

There are examples of successful operation on the development of entrepreneurship in the local community. In Söderhamn, Sweden, the city authorities decided to take active role in the development of entrepreneurial attitude of the community. It is significant that the action included changes

in the whole system of formal education: from pre-school to higher education. The authorities accepted the interpretation that entrepreneurial skills and attitudes need to be nourished throughout the education process to yield the start of the business venture (Högberg 2012).

Delmar and Davidsson (2000) in their survey of start-ups found out that 2% of the interviewees try to start their own business in Norway. It is less than in the USA and Sweden. They also confirmed that role models, working experience, age and education influence inclination towards self-employment. Self-employed persons have significantly higher education and management experience.

In the 2009 labour survey in the United Kingdom (Dawson et al. 2009) were looking for key motivational factors of self-employment. They found out that the most important motivational dimensions for entrepreneurship are business opportunity, type of occupation, propensity to the specific lifestyle, necessity for balancing of private life and business, available resources, and supportive environment. However, they also found that opportunity driven self-employment is more inherent to people with higher education.

Social scientists, psychologists and economists have been looking for the most acceptable explanation of entrepreneurship or self-employment behaviour. Beside the abovementioned results, different theoretical behavioural models were developed to explain how and why the entrepreneurial behaviour is expressed. Most of the models are based on cognitive theories which have been widely used in research of connection between human attitudes, norms, intentions and behaviour. (Kolveroid and Isaksen 2006, McStay 2008).

According to Kolveroid and Isaksen (2006), the intention to be self-employed is a necessary prerequisite the actual self-employment behaviour. They found that most of new business founders used to have strong intentions to become self-employed before starting own businesses. However, it is necessary for an individual to consider self-employment as desirable before his or her self-employment intention will be formed. (Shapero and Sokol 1982).

Young population, especially students, have been given a special attention in such surveys since they will have to play an important role in the future business development. In most of the works done so far, students express positive attitudes, high level of perceived self-efficacy and positive intentions in regards to self-employment. However, their fear of unknown, lack of ideas and skills prevent them to practice it at higher rate (Tretten 2005). Tretten also stated that the intention is highly related to the positive attitudes about the self-employment. More than one third of the students sample in his research stated that they are interested in starting their own business. Regarding to the gender differences, male students expressed higher level of interest. He also found out that someone's perceived and expressed self-efficacy is influenced by examples from nearby social groups (family, friends).

Kumara (2012) also accepted the Ajzens Theory of planned behaviour (TPB) in the examination of undergraduates' intentions towards entrepreneurship. Yet, he determined only a modest connection between students' attitudes and self-

employment intentions. There has been found no difference in the attitudes towards self-employment across gender, but the difference in the entrepreneurship intentions has been found.

In the research conducted in 2011/2012, Majagoro and Mgabo (2012) surveyed 302 students to measure relations between self-employment experience (personal or through role models), attitudes and intentions. Parental influence and risk taking propensity have been found as the most influential variables. More positive attitudes towards self-employment were found with students from entrepreneurial families as well as students that were exposed to some form of the entrepreneurship education. It is interesting that female students showed higher interest in self-employment than their male colleagues.

As stated by McStay (2008), "the intention to be self-employed is a necessary antecedent to the actual behaviour of choosing self-employment as a career option". In that sense, new business founders are found to have intentions to become self-employed very much connected with the subsequent behaviour. She also stressed out that stated intention could serve as a good basis in predicting of person's behaviour, while personal attitudes or cognitions are the primary explanatory mechanism for the formation of intention.

An attitude is a mental state of readiness that influence the individual's respond to objects and situations related to him or her. In this way, attitudes are used to predict human intentions and behaviour, where persons with positive attitude towards particular behaviour are expected to have higher probability to perform it. (Tretten 2005)

Attitudes towards entrepreneurship are also considered as related to origin of an individual. Bauder (2005) found that urban or rural background is a good predictor of entrepreneurial attitudes, while regional origin, ethnic origin, and classes of immigrants to Canada are weakly linked with attitudes towards entrepreneurship.

Each individual has a certain level of faith in his or her abilities to perform successfully. We can take the level of faith as a perceived self-efficacy, and it has been found that this personal perception of self-ability increases the likelihood of positive attitude, then intention and finally the consequent behaviour (Gardner and Pierce 1998; Ajzen 1991).

In this paper we use the TPB model to examine how students' intentions are interconnected with their attitudes towards self-employment and self-efficiency. Individual's intentions show the willingness to perform a particular behaviour, and are determined by person's attitudes and norms. Since attitudes can change under the influence of social groups and norms, we have extended our research with the variable of previous entrepreneurial experience, as proposed by McStay (2008).

The objectives of the research were:

1. To evaluate the interrelationship between students' entrepreneurial and work experience, and:
 - Their perceptions of entrepreneurial self-efficacy and attractiveness of self-employment,
 - Their self-employment intentions.
2. Assess the impact of experience on attractiveness of self-employment among the students.
3. To assess the extent to which students' perceived de-

sirability of self-employment and entrepreneurial self-efficacy influence their self-employment intentions.

4. To investigate if local students achieve results equivalent to those of comparable studies conducted in different parts of the world.

Based on the objectives, the following research hypotheses were tested in the paper:

1. Students' previous entrepreneurial experience is positively correlated with perceived entrepreneurial self-efficacy, and the attitude toward self-employment;
2. There is no significant differences between male and female students in regards to their attitudes towards self-employment, perceived self-efficacy and self-employment intentions;
3. Students with more positive attitude towards self-employment express the intention to become self-employed to a greater extent.

2. Materials and Methods

Same as in the McStay's study (2008), three cognition-based theories were used in constructing of the used model. All three theories are interconnected for the purpose of the model since they try to explain and predict individuals' intentions based on his or her perceptions or cognitions:

- Shapero's Entrepreneurial Event (SEE) (Shapero and Sokol 1982),
- The Theory of Planned Behaviour (TPB) (Ajzen 1991) and
- Social Cognitive Theory (SCT) (Bandura 1986).

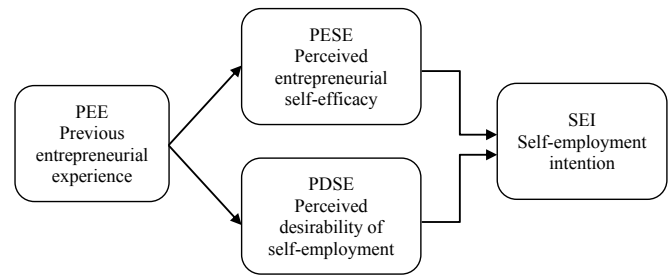
However, probably the most often used model so far is the model based solely on the Ajzen's TPB.

Many researchers have used the TPB to measure attitudinal, intentional and behavioural constructs in the entrepreneurship. The intentions models of Shapero and Sokol, and Ajzen, with additional variables included to those used in this research, have been implemented in several studies dealing with the antecedents to entrepreneurial intention.

In this combined intentions model, the perceived behavioural control variable (TPB model) and perceptions of feasibility variable (SEE model) were replaced by perceived entrepreneurial self-efficacy variable. This replacement is supported by results of Armitage and Conner work. They actually confirmed that self-efficacy is more succinctly defined and more strongly correlated with intention than perceived behavioural control, and that perceived feasibility of self-employment and perceived entrepreneurial self-efficacy are highly correlated (Armitage and Connor 2001, McStay 2008).

The model and its variables that were measured in the research, as well as their interconnections, are indicated in the Figure 1.

Figure 1. The adjusted entrepreneurial intentions model
Source: Authors' drawing according to McStay 2008.



The previous entrepreneurial experience is the exogenous variable, while perceived desirability of self-employment, perceived entrepreneurial self-efficacy, and self-employment intentions are endogenous variable.

The survey was conducted in academic year 2014/2015 on the University of Zagreb Faculty of Agriculture. In total 227 students out of 2300 at bachelor and master study levels were surveyed. The used questionnaire consisted of five parts, namely:

1. 7 dichotomous questions used to determine students' entrepreneurial experience
2. 4-items Likert scale for the assessment of the perceived entrepreneurial self-efficacy
3. 14-items Likert scale for the assessment of the perceived desirability of self-employment
4. 8-items Likert scale for the assessment of the self-employment intention
5. Questions about demographic and social status of respondents.

The entrepreneurial experience was measured on the two levels scale: high or low. Respondents could achieve 1 or 0 points per each of 7 questions, depending on whether the answer was "yes" or "no". The maximum achievable result or sum was, consequently, 7. The respondents with the sum of 5 or above are those with high previous entrepreneurial experience, while others are with low experience level.

All three Likert scales were constructed in the same manner giving interviewees chance to express their level of agreement with the statements offered on the five point scale from 1 to 5. In all cases 1 meant "fully disagree", and 5 "totally agree". For all three variables determined by using Likert scales the score was calculated as the average of the scores on all items. This way the scores were obtained namely for: (1) the perceived entrepreneurial self-efficacy (PESE), (2) the perceived desirability of self-employment (PDSE), and (3) the self-employment intention (SEI).

To achieve the goals of the research, the collected data were analysed by using descriptive statistics indicators. Differences in scores on PESE, PDSE and SEI with respect to gender were tested using t-test for independent samples (2-tailed). The same test was used to check differences in scores on PESE and PDSE with respect to the previous entrepreneurial experience (PEE). The one-way ANOVA was used to estimate the relationship between the intention of self-employment as the dependent variable, and entrepreneurial experience and

attitudes of respondents as independent variables.

The multivariate GLM or multiple linear regression was applied to build the quantitative model for prediction of self-employment intentions. The mathematical expression of the regression model used is:

$$SEI_i = \beta_0 + \beta_1 PEE_i + \beta_2 PESE_i + \beta_3 PDSE_i + \varepsilon_i \quad (1)$$

where:

SEI is the score for self-employment intention

PEE is the score on previous entrepreneurial experience

PESE is the score on perceived entrepreneurial self-efficacy and

PDSE is the score on the perceived desirability of self-employment.

3. Results and Discussion

There are nine three-year undergraduate and thirteen two-year graduate study programmes with about 2,300 students at the University of Zagreb Faculty of Agriculture. Female students are prevailing since they make, depending on the year, about 60% of the total number (UZFA 2015). The study included 227 students majority of which were also feminine (63.4%). Given that the surveyed students come from undergraduate and graduate programmes, the age of the participants varies from 21 to 36 years. It should be noted that the average age was 23, and that 93.3% of the respondents are in the range of 21 to 25 years. Only seven of them, or 3.1%, are older than 26 years. Surveyed students in the vast majority are not married, but still 50.7% of them live in some kind of relationship. Further, 47.6% of respondents are single, while only 1.7% are married or in extramarital community.

The surveyed students in most have available the monthly budget of up to HRK 3,000: 40% has the budget of up to HRK 1,000, and 47% between 1,000 to 3,000 HRK (1 EUR≈7.65 HRK). Additional 12% of respondents have available 3,000 to 5,000 HRK, and only two respondents have the monthly budget of more than 5,000 HRK. Available funds come either from the family or from their own, mostly part-time, working engagements. Hence, the majority of surveyed students occasionally perform work for pay (52.4%). The others are equally divided between those who are not working (25.3%) and those who work for pay regularly (21.8%).

Almost 4/5 of interviewed students regularly or occasionally work for pay. However, very few of those perform the work in the business ran by himself/herself or the family. In addition, as shown by the score on variable *previous entrepreneurial experience* (PEE), a small number of respondents have met with entrepreneurship directly or through role models. On the scale from 1 to 7, the respondents have scored 3.43 in average (st. dev.=1.88), which is less than in the similar study conducted at an Australian university (mean=4.28, st.dev.=2,086) (McStay 2008). A little less than ¼ of respondents (73.6%) achieved *Low* score for PEE (between 1 and 4 points), which means that they do not have experience with entrepreneurship, both personally and in the immediate social groups. The rest achieved *High* score for PEE (5-7 points), meaning they have

had entrepreneurial experience. PEE variable in the study was treated as an exogenous factor that is expected to have an effect on the intention of self-employment.

As mentioned above, many authors highlight the importance of perceived attractiveness or desirability of an activity for an individual in creating intention to undertake the activity. McStay (2008) developed the Likert scale to measure the desirability of self-employment, and found that the students see self-employment as relatively desirable, since the average degree of agreement with the positive statements was 3.49 (5 was the maximum). The same Likert scale was used in this research, while the average degree of agreement by all respondents on the PDSE variable was 3.66 (st. dev.=0.8373). The score is quite similar to the McStay's. Kumara (2012) has received an average result of 4.2, but she used a direct question about the attractiveness of self-employment instead of the Likert scale.

Table (1): Descriptive statistics for the model variables

	Previous entrepreneurial experience PEE	Perceived entrepreneurial self-efficacy PESE	Perceived desirability of self-employment PDSE	Intention to be self-employed SEI
N	Valid 227 Missing 0	227 0	227 0	227 0
Mean	1.26	3.6888	3.6641	3.2186
Median	1.00	3.6250	3.7500	3.2500
Std. Deviation	.442	.56260	.83732	.71318
Range	1	3.00	3.75	3.63
Minimum	1	2.00	1.25	1.38
Maximum	2	5.00	5.00	5.00
Percentiles				
25	1.00	3.3750	3.2500	2.7500
50	1.00	3.6250	3.7500	3.2500
75	2.00	4.0000	4.2500	3.7500

Source: Authors' data processing output in SPSS.

Self-confidence or belief in the own ability is the trait of proactive people, of persons who tend to create a job by themselves. The perceived own entrepreneurial ability was measured by the Likert scale with 16 items, where the average degree of agreement shows what is the confidence of the respondents in their own abilities. The higher the score on the scale from 1 to 5, the respondent is more confident in self-efficacy. Respondents achieved scores in the range from 2 to 5, and the average score for all was 3.68 (St. dev. = 0.5626). In a comparable McStay's (2008) survey the average score was 3.81, which indicates a slightly higher perception of self-efficacy with the Australian students.

The third Likert scale yielded values of the dependent variable, i.e. the variable which measures the *intention of self-employment*. The Likert scale has 8 statement and the

agreement degree range of 1 to 5. The higher the number means the stronger intention to self-employment. Average degrees of agreement in respondents ranged from 1.38 to 5.00, and the overall average of the whole sample was 3.22 (St. dev.=0.7132). The result is comparable with the McStay's (2008) work, where the participants had an average value of 3.18, and a slightly higher standard deviation (0.959).

Results of testing the differences in mean values with respect to gender showed that a statistically significant difference at a significance level of 5% exists only for the variable *perceived desirability of self-employment* (PDSE).

Table (2): Results of the T-test for Equality of Means*: PESE, PDSE and SEI with respect to gender

Test variables	t	Sig. (2-tailed)	Mean Difference
PESE	.021	.983	.00166
PDSE	2.221	.027	.25412
SEI	1.743	.083	.17056

*Equal variances assumed; 95% Confidence Interval of the Difference.
Source: Authors' data processing output in SPSS.

It turned out that self-employment is more desirable for male than female students, and the difference in mean values is 0.254 (Sig. (2-tailed)=0.027). The magnitude of this difference is small because Eta squared is only 0.021. As for the *perceived entrepreneurial self-efficacy* and the *self-employment intention*, there is no statistically significant difference in scores between males and females. This finding partially confirmed the hypothesis about zero difference between males and females on variables PDSE, PESE and SEI.

Correlation and t-test were used to analyse relationship and mean differences in *perceived desirability of self-employment* and *perceived self-efficacy* with respect to the score on the variable *previous entrepreneurial experience*. Correlation coefficients indicate a weak, but positive correlation between prior experience and the desirability of self-employment (Pearson correlation = 0.265), and between experience and self-efficacy (Pearson correlation = 0.265). In both cases, the obtained correlations are statistically significant at the 12:01 level (2-tailed). This means that students with a higher value for the variable PEE have higher values on variables PDSE and PESE.

Table (3): Results of the T-test for Equality of Means*: PESE and PDSE with respect to PEE

Test variables	t	Sig. (2-tailed)	Mean Difference	Eta squared
PESE	-3.964	0.000	-0.32527	0.065
PDSE	-4.121	0.000	-0.5019	0.070

*Equal variances assumed, 95% Confidence Interval of the Difference.
Source: Authors' data processing output in SPSS.

The t-test results confirmed statistically significant differences in the mean scores on both examined variables for students with different levels of entrepreneurial experience. The mean difference for PDSE score was -0.502 (Sig. (2-tailed) = 0.000), but the magnitude of this difference is moderate (Eta squared=0.070). For the PESE variable the mean difference is also statistically significant (Sig. (2-tailed) = 0.000) with the absolute value -0.325, and the magnitude only slightly higher (Eta squared = 0.065).

Given that the attitude toward certain activity is considered a very good predictor of intention to perform the activity, we examined the relationship between scores for the *perceived desirability of self-employment* as an independent, and *self-employment intention* as dependent variable.

Table (4): One way ANOVA output for SEI as the dependent variable and PDSE as the factor

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	47.212	15	3.147	9.804	.000
Within Groups	67.736	211	.321		
Total	114.948	226			

Source: Authors' data processing output in SPSS.

The results showed that there is a statistically significant difference in the *self-employment intention* score with respect to the *perceived desirability of self-employment* as determined by one-way ANOVA (F (15, 211)=9.804, p=0.000). Students who have achieved higher scores on the variable PDSE also have higher scores on the variable SEI. This confirmed the hypothesis that students who prefer self-employment as a way of finding a job will also have stronger intention to become self-employed.

Based on the results presented so far, we assumed that the positive previous experience, the desirability of self-employment and the self-confidence all together should have a positive effect on the self-employment intention. Thinking in this way, we have created a multivariate linear regression model where the score for the self-employment intention is taken as the dependent variable, while independent variables are PEE, PESE, and PDSE. Results of the regression analysis showed that the model explains about 37.5% of the variation in self-employment intentions.

Table (5): Multiple linear regression output

R	R Square	Adjusted R Square	Std. Error of the Estimate		
.612 ^a	.375	.366	.56770		
	Sum of Squares	df	Mean Square	F	Sig.
Regression	43.079	3	14.360	44.557	.000 ^a
Residual	71.869	223	.322		
Total	114.948	226			
	Beta	t	Sig.		
(Constant)					
PEE	.044	.793	.428		
PESE	.110	1.790	.075		
PDSE	.536	8.676	.000		

a. Predictors: (Constant), Perceived desirability of self-employment, Previous entrepreneurial experience, Perceived entrepreneurial self-efficacy

b. Dependent Variable: Intention to be self-employed

Source: Authors' data processing output in SPSS.

The regression model also showed that the variable PDSE is the largest contributor in explaining the variation, i.e. it has the highest correlation with the dependent variable SEI (beta=0.536, Sig.=0.000).

4. Conclusion

Entrepreneurship and self-employment are forms of desirable behaviour we would like as much as possible to see in young people. Especially in students who are expected to be carriers of economic development in the society of the near future. The study based on the Theory of Planned Behaviour examined to which extent students at the University of Zagreb Faculty of Agriculture intend to move towards self-employment, what are their experiences and attitudes, and how they assess their entrepreneurial abilities. The conducted research reveals a number of interesting facts, and one of them is that a similar model could be applied to populations of students in very different environments, from the Australian to the Croatian.

The results indicate the importance of experience in the creation of self-employment intention, which means that previous own entrepreneurial experience, or the same experience of persons close, has a positive effect on the creation of individual's intention to start up own business. For the development of entrepreneurship is extremely important to nurture positive attitude about this phenomenon. In fact, the study results proved that students who have a more positive attitude towards entrepreneurship and are more self-confident would think about self-employment to a greater extent.

This finding is particularly important in the context of the still rather negative general attitude towards entrepreneurship in Croatia, which is a result of negative experiences in the transition period of the economy and the related questionable process of privatization of state property. Indeed, although the positive correlation was found between perceived self-efficacy and the self-employment intention, the higher correlation coefficient was obtained for the relation between the desirability of self-employment and the self-employment intention. As for the results with the respect to gender, male students achieved higher score on desirability of self-employment. Therefore, we can expect, at least judging by the intentions, that gender balance will remain disturbed in the future since women entrepreneurs will continue to be in the minority.

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TRAJECTORIES OF AGRICULTURAL MODERNIZATION AND RURAL RESILIENCE: SOME FIRST INSIGHTS DERIVED FROM CASE STUDIES IN 14 COUNTRIES

Karlheinz Knickel

*Independent Analyst and Consultant, Associate of Institute for Rural Development Research at University
Frankfurt/M, karlheinz.knickel@gmail.com*

Abstract: *In this paper, alternative trajectories of agricultural modernization and rural resilience are explored based on case studies in 14 countries. The analysis is to support discussions about the further development of agriculture at a time when the agricultural sector must respond to an increasing scarcity of natural resources, challenges like climate change, urbanization, demographic change, food security, consumer demands, distributional issues in food value chains and changing urban-rural relations. The discussion relates different trajectories of agricultural modernization to the multiple mechanisms underlying rural prosperity and resilience. The mainstream capital-intensive and technology-driven model of agricultural modernization is contrasted with more incremental, socially embedded and localised forms of development. Potential synergies between different modes of farm 'modernization', resilience and sustainable rural development are highlighted and a different future-oriented understanding of the term 'modernization' explored. The basis for the analysis are case studies in 14 countries (including Turkey and Israel). The key question asked is how actors are connecting economic, social and natural systems in the different cases and how the connections made (or not) point to different ideas about modernization. The conclusions focus on some current information needs of policy-makers: the links between different forms of farm modernization, rural development and resilience, and the implications for agricultural knowledge systems and the new European Innovation Partnerships. It is emphasized that local capacities for transdisciplinary research need to be strengthened and that more attention should be paid to addressing modernization potentials that are less mainstream. The paper seeks to foster discussions that help overcome simplistic viewpoints of what 'modernization' entails. It is based on an earlier review paper by Knickel, Zemeckis and Tisenkopfs (2014).*

Modernization, the orienting principle of our time

Countries that are seen as 'modern' are also seen as 'developed'. But what type of farm modernization can be considered sustainable in view of current and foreseeable challenges? What changes in farming contribute to prosperous rural areas, and how? Do we need to rethink, and reorient, agricultural research and development? And where do the millions of subsistence and semi-subsistence farmers in the new EU member states fit into this discussion?

In today's post-industrialist world, the daunting claims of modernization are steadily eroded. Analysts emphasize the need for a more 'reflexive' and 'reflective' approach to modernisation (Beck *et al.*, 1994; Borne, 2010; Rasborg, 2012). The argument is that technological achievements, material prosperity and consumption tend to be over-emphasized while ignoring other quality of life values, equity issues and long-term sustainability. Resilience is a new term that is central in this discussion. It has become prominent in particular through the

work of the Stockholm Environment Institute (SEI) but also the International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD). I argue that it ought to become more important in European frameworks for agricultural and rural development, and the related policies.

In more practical terms, resilience stands for the ability to embrace change with a capacity to adapt (McManus *et al.*, 2012). Resilience recognizes that people are not passive objects but capable agents (Olwig, 2012). Applied to farm (household) and rural systems, it acknowledges that natural and economic systems are continuously changing and that farm households (and rural communities) need to have the ability to absorb disturbance and retain basic functions and structures (Berkes *et al.*, 2000). Linked with that is the ability to maintain the integrity and functioning of natural systems, and to restore degraded ecosystem services. Related studies have mainly focussed on farm household, farming and rural systems and their functioning in variable environments (Rodriguez *et al.*, 2011), the stability of agroecosystems, particularly as they

are threatened by global environmental change (Olwig, 2012; IAASTD, 2009), and the multifunctionality of rural regions (Bryden *et al.*, 2011; Knickel *et al.*, 2004; Wilson, 2010).

The objective of this paper is to explore alternative trajectories of agricultural modernization and rural resilience. I contrast the capital-intensive and technology-driven model of agricultural modernization with more incremental, socially embedded and localised forms of development. A particular focus in our discussion is the level of farms and rural communities where resilience relates above all to the capacity to learn, take decisions, and adjust economic and social activity to changing market and societal conditions. Knickel *et al.* (2014) argued that the capacity to innovate and collaborate can be seen as the other side of the coin called “*smart and sustainable modernization*”.

Agricultural and rural development challenges are discussed in much detail in the assessments and foresight reports of the Standing Committee on Agricultural Research (SCAR) (2011, 2012) and the background documents on CAP reform by the European Commission (2010, 2011, 2012). Knickel (2013) summarizes the main challenges to be addressed referring to sustainable food production and the particular need to increase access to food in developing countries; environmental sustainability and resource use efficiency, including low carbon production systems; the quality of life of farmers, consumers and society at large, including high food quality and environmental integrity; and the global scale of problems which shows that resource and emission-intensive lifestyles in rich countries can neither be sustained nor transferred to the world as a whole. The big question is in how far technological progress and ‘modernization’ will be sufficient in addressing these challenges. For example, the bio-based economy has been suggested as a smart way to overcome resource constraints and to make production systems more sustainable. There is of course also the risk that the related structural changes might aggravate the concentration of power in up- and downstream industries and increase dependencies. The concepts of multiple modernities (Fourie, 2012) and resilience pathways (Wilson, 2013) can help to explore alternative futures.

The analysis and discussion presented in this paper is based on a first appraisal of the case study profiles and additional information from 14 countries (including Turkey and Israel). The analysis is grounded in social sciences, economics, political theory and geography, and it has a strong interdisciplinary perspective. The analysis and discussion are driven by concerns related to the resilience of agriculture and rural communities and a more balanced development of European regions. The paper is based on some key ideas that are investigated in the new transdisciplinary RETHINK research programme ‘Rethinking the links between farm modernization, rural development and resilience in a world of increasing demands and finite resources’. The programme is supported by the European Commission and funding bodies in 14 countries under the umbrella of FP7 and the RURAGRI ERA-NET. RETHINK is carried out at a time of potentially profound change - when the agricultural sector must finally respond to increasing resource scarcity and distributional demands,

and when economies, production systems and lifestyles must be transformed.

In the first part of the paper, I will briefly sketch out the predominant lines of thinking about agricultural modernization. I refer to the ideas of progress, modernity and modernization and will briefly examine the impact of policy signals on change. Thereafter I present the conceptual and analytical frameworks applied in this research as well as the case studies in 14 countries. In the central part of the analysis and discussion, I focus on the question in how far and where precisely the case studies represent alternative development trajectories. In each case study, I will ask how the links between social and ecological systems are conceptualized and how this expresses different ideas about modernization. Focus is on the interrelations between agricultural change (and modernization), rural development and resilience as well as the importance of adaptive management and ecological modernization concepts. In the concluding section, I pull together the main findings identifying best practices supporting a sustainable agriculture in vibrant rural areas. Throughout the paper, I emphasise that policymakers, technology developers, researchers and stakeholders need to overcome simplistic viewpoints of what ‘modernization’ entails.

Different views about agricultural modernization

The modernization of European farming in the 20th century

The idea of progress implies that advances in technology, science, and social organization inevitably produce an improvement in societal conditions. The discernible assumption is that a society can raise its quality of life and foster economic development through the application of science and technology. Progress will in this logic happen if people apply their reason and skills. The role of the ‘expert’ is to help overcome hindrances that slow progress.

Modernization is perceived to contribute to ‘progress’. The modernization of European farming in the 20th century freed up a significant proportion of the workforce and eliminated drudgery. It was also connected with major increases in productivity, leading to the satisfaction of European food demand and, at times, sizable surplus production. On the negative side of the specialisation, intensification and scale enlargement of agriculture are monotonous production landscapes, a disproportionate use of natural resources (in particular fossil fuels and minerals like potassium and phosphorus), an increase in emissions and a standardization of food qualities. At another level, we can see a concentration of farming in lowland plains and or regions with better access to (imported) feed, fertilizers or markets, and a marginalisation of other, normally less favoured areas.

The industrialization of production tends to lead to the individual and the individual business becoming more important; in agriculture replacing the machinery ring, the commons or the dairy coop. The same tendency might, at least partly, explain that public goods are under increasing pressure in ‘modern’ societies. Globalization can, against

this background, not only be defined as the integration of economic, political and social systems but also as the spreading of modernization across borders.

“A new technology does not merely add something; it changes everything”

The statement from Neil Postman (1992) emphasizes that new technology tends to lead to social change. The availability of cheap fossil fuels fostered industrial manufacturing and enterprise development. Many agricultural technologies of the past decades are fossil-fuel-based and energy-intensive, leading not only to increased dependencies from fuel imports but also to a release of labour from production and huge increases in greenhouse gas emissions, thus contributing massively to climate change.

Agriculture is characterised by close links between social and ecological systems. Technological change has therefore, probably more than in any other sector, major repercussions on the organization of production, the natural environment and, in the long term, farm and rural structures. The introduction of tractors and of mineral fertilizer has both led to far-reaching changes in production systems and agricultural structures. Mineral fertilizer led to major increases in the productivity of land while increasing greenhouse gas emissions and the dependency from fossil fuels. Both, the low cost of fossil fuels and the labour demand in other non-agricultural sectors have decreased a lot in the past years – maybe changing the game again.

This all happens in a context of climatic change and declining resources of critical input factors for contemporary industrialized agriculture. ‘Peak oil’ is already influencing the costs of nitrogen fertilizer, and other crucial nutrients for crop production like phosphorous might follow. Deteriorating soil fertility, dropping groundwater tables and degradation of biological diversity in intensive arable farming areas reduce the resilience of high input agriculture.

What seems clear is that ‘business as usual’ is no longer an option. The summary statement in OECD’s Environmental Outlook to 2050 speaks for itself (OECD, 2012): *“Humanity has witnessed unprecedented growth and prosperity in the past decades, with the size of the world economy more than tripling and population increasing by over 3 billion people since 1970. This growth, however, has been accompanied by environmental pollution and natural resource depletion. The current growth model and the mismanagement of natural assets could ultimately undermine human development.”*

The next transition that until now is only starting in very few countries is the move towards low carbon resource-efficient production systems, mobility and lifestyles (Fan and Ramirez, 2012; Norse, 2012). The productivity of the use of natural resources and the ecological and carbon footprints are becoming key parameters in any system change. Related to that is the question: will the ‘knowledge-based bioeconomy’ just become a logical continuation of the industrialisation of agriculture?

Conceptual framework for the analysis and data basis

The conceptual and analytical frameworks applied in the 14 case studies and analysis build on the results obtained in a large number of EU-funded research projects: MULTAGRI and TOPMARD emphasized the multifunctionality of rural areas and the central role of farming in the provision of public goods (Cairol et al., 2009; Bryden et al. 2011). The findings of this research have been confirmed in a major IEEP study on the provision of public goods through agriculture (Cooper et al., 2009). The BIOSCENE project showed that biological diversity is crucial for rural viability and agricultural activities (at different spatial and temporal scales) (Olsson et al., 2011). The transformation of public goods in the rural economy was the focus of the TOPMARD project, and the DORA, RESTRIM, INSIGHT and ETUDE projects (Bryden et al., 2004; Cecchi & Micocci, 2004; Knickel et al., 2009; Van der Ploeg & Marsden, 2008; Milone & Ventura, 2010) emphasized the central role of social capital and of less tangible factors in the dynamics of rural areas and positive change. The DORA, MULTAGRI, TOPMARD, and a number of ESPON and other research projects emphasize the incidence of pluriactivity and income combination as well as the context-dependency and diversity of development trajectories both at farm and at regional level. Taking a systems approach to sustainable farming, Darnhofer et al. (2010) turn to resilience thinking with its focus on the interdependence of social and ecological systems.

In our analysis, farming is conceptualized as being part of a set of systems spanning several spatial scales and including agro-ecological, economic and political-social domains. Within such a complex system, farm sustainability can only be achieved through adaptability and change. The analysis focusses on conflicting goals and on potential synergies while explicitly recognizing the complexity of challenges, the diversity in situations and the multidimensionality of strategies and ways forward. An example is the integration of various land use functions that can reduce conflicts and land consumption while the related coordination processes need to be enabled by policy measures as well as in local actions.

In all case studies, and in the subsequent analysis and discussion, we adopt a more integrative systems perspective and try to avoid focussing on a small segment of the ‘whole’. Interrelationships and understanding interrelated change dynamics, I think, is critically important.

Multidisciplinary, multi-method approach in data collection and analysis

The analysis is based on the assumption that 14 carefully selected case studies will improve our understanding of the multiple mechanisms underlying rural prosperity and resilience. Four clusters of research questions or themes were used to gather data and they are also used to structure the comparative analysis.

The four thematic clusters and key questions are:

(1) *Resilience*: What are the key features of resilient agricultural systems and what strengthens the resilience of farming and agricultural land use (mechanisms, strategies)? How do market forces, societal demands, resource constraints and place-based actions interact to create both opportunities and constraints for more resilient agricultural systems?

(2) *Prosperity*: What pattern of development enhances rural prosperity? Or, more specifically, how can we shift from a focus on costs of production, productivity and cost-efficiency (i.e. input-output relations) to effectiveness (i.e. adequacy to accomplish a purpose such as quality of life). How are opportunities identified and used? What trade-offs are involved? What underlying logic can be identified? What development trajectories (and patterns) can be identified across different case studies and regions? How can urban-rural relations be shaped in a way that increases rural prosperity?

(3) *Governance*: What are the strengths and weaknesses of different governance structures identified in the range of case studies? How do actors respond to increasing demands and finite resources? How are the relationships between rural areas and agriculture expressed, functionally and spatially? What is the role of multifunctionality in land use? How can the relationships between rural areas and agriculture be shaped in a way that enables collective actions, increases rural prosperity and strengthens resilience? What is the role of multi-stakeholder partnerships and cooperative approaches?

(4) *Knowledge and learning*: What is the role of human resources, social learning and of different knowledge bases in the changes observed and outcomes obtained in different case studies? What meaning does 'farm modernization' have in the particular case? What are the key parameters from the point of view of various stakeholders? What kind of knowledge is used and how is it accessed? How is knowledge connected with innovation? How does the collaboration between regional authorities, farmers, research and extension support positive developments?

The main purpose of the case studies is to analyse and learn from examples that have been developed by practitioners and that have been – in one way or another – successful. In order to ensure comparability, a common analytical framework was applied in each of the 14 case studies in order to guide the gathering and compilation of empirical evidence. The analytical framework included for each of the four themes a set of qualitative and semi-quantitative indicators. For a complete description of conceptual and analytical frameworks, see Darnhofer *et al.* (2014, 2015).

Each case study was to provide an in-depth assessment of two or three thematic areas. Case study reporting followed a common reporting template. In the relevant sections of this reporting template, each theme and issue were addressed through specific questions, common tabular overviews, maps and charts. Each piece of information provided was to be supported by empirical evidence with explicit references to sources of data and methods. The most important sources of

information included expert interviews, results from workshops and/or focus groups, discussions in national stakeholder groups, official statistics and survey data. Sections for 'additional case study-specific issues' allow you to include information that you consider relevant but does not fit in the other sections of the template. Researchers were asked to collect quotes from key actors, practitioners and stakeholders as well as graphical material for illustration of findings (incl. photos, images).

In the concluding section of the template were asked to relate the main results of their case study back to the overarching research goals and questions. Two internal review rounds were organised in order to ensure a high quality of all case study reports.

The 14 case studies

Detailed information on all 14 case studies including the complete case study reports is available on the RETHINK project website. In this section, I will therefore only provide a short overview (**Table 1**).

Based on the analyses and data presented in these 14 case study reports, I will ask in subsequent sections in how far and where precisely the different cases represent alternative trajectories of agricultural development. In each case study, we can find very particular links between social, economic and ecological systems. I argue that this expresses differences in contexts (resource endowment, agricultural and non-agricultural opportunities, socio-cultural features and preferences, etc.) as well as different ideas about modernization. Focus in each case study report is on the interrelations between agricultural change (and modernization), rural development and resilience as well as the importance of adaptive management and ecological modernization concepts.

Discussion of the interrelations between agricultural change, rural development and resilience

The concentration of farming has marginalized many rural areas

The last decades have – in spite of the particular support provided to less favoured areas – seen a very substantial concentration of agricultural production and polarisation of agricultural structures in Europe. Given the increasing demands for a more balanced regional development, both the intensification of agriculture in favourable areas and the simultaneous desertification of marginal areas are problematic (e.g. abandonment of cattle farming in mountainous grassland areas, desertification of vast farming areas in southern and eastern European countries).

Factors that will influence the future of European agriculture and of rural areas include likely demographic changes, the further development of food (value) chains, urban-rural relations, anticipated trends and perspectives in

Table 1
Overview of the 14 case studies discussed in this paper

	Case study	Relevance for the questions addressed here
BE	New forms of governance in landscape development	The case study focuses on the establishment and governance of a landscape fund. Central questions include alternative strategies for landscape development that could more effectively address the demands of people in peri-urban areas, and the role of alternative financing mechanisms to potentially revalorize multifunctional agriculture, increase the resilience of local farming systems and improve urban-rural relations.
CH	Sub-urban food production systems in a Swiss agglomeration	The growing number of local agriculture initiatives and their diversity reflects, among others, the wish of many people to reconnect with basic values and the increasing concern about the sustainability of agricultural and food systems. This case study is about local agriculture initiatives in the agglomeration of Bern. It explores the question of economic and social links between local farmers and inhabitants through local food product markets.
DE	Opportunities for creating an eco-economy: Lessons learned from the Regional Action and Bio-energy Regions schemes	The case study focuses on the role that rural areas and agriculture can play in a low-carbon resource-efficient economy. Rethinking farm and rural modernization is discussed in terms of more resource-efficient, low-carbon processes and products, the re-valorisation of different kinds of knowledge, and new forms of governance in the related change processes. The analysis concentrates on the related transitions and changes. It contrasts key factors and determinants of an eco-economy in comparison with a bio-economy with its implications for farm and regional development.
DK	Landscape strategy making and agriculture	The rural landscape as the spatial frame for agriculture, agricultural future development and rural development is the subject of the Danish case. The overall objective is to explore and reflect upon how collaborative strategies for the design of future agriculture landscapes can contribute to the development of more well-functioning agricultural landscapes and how such elevated landscapes can be considered a rural development factor in general. Experiences with collective and individual landscape management are examined in order to gain knowledge about how agriculture and landscape, and agriculture and rural development may be reconnected and how social and ecological landscape services can be enhanced through different kind of collaborative arrangements and initiatives.
ES	Innovation and social learning in organic vegetable production in the Region of Murcia	The case study focuses on the evolution of the Camposeven cooperative, founded in 2007 by farmers with over 40 years' experience in the agricultural sector and in the production, processing and marketing of horticultural crops, both organic and conventional. Emphasis in the cooperative is on the use of sustainable techniques, new ways of working together based on trust and transparency, and prioritizing quality over quantity. Governance, knowledge and learning are considered in this case study almost as tools that result in increased prosperity and resilience.
FR	Transitions towards ecological production	The French case study includes a sociological and agronomical analysis of the greening of the agri-food system in the Drôme Valley (Biovallée). In an economic analysis, the strengths and weaknesses of market-mechanisms for biodiversity preservation are assessed and new market mechanisms devoted to support a continuous improvement of agricultural practices explored. The starting point is an analysis of farmers' trajectories towards ecological production including various degrees from integrated production to organic farming. It is asked, how dynamic combinations of both specialization and diversification in the fruit and vegetable sector can lead to a better resilience at farm scale. The study includes a systemic analysis of the role of the different actors in the agri-food system, their interactions, the social learning processes and the forms of coordination and governance at the territorial scale.
LT	Resilient farming systems and market differentiation: Challenges and opportunities in farmers' markets	Alternatives in the food sub-sector are identified across regional and national differences and across farmers' markets. The focus will be on how farmers, local inhabitants and consumers respond to increasing demands and finite resources, and how local added value in the food sector can be maintained. Key questions relate to the significance and role of dedicated marketing, farmers, local inhabitants and consumers views, and the relationships between rural areas and agriculture. Consumer needs are explored as well as farmer's attitudes and change behaviour. The issues that key actors connect with farm modernisation and related bottlenecks are identified.
LV	Small farms' development strategies	The case study is focused on Tukums region that is a centre of Latvian fruit growing with comparatively long traditions, well-established research institutes and farms. It is analysed how farming and food supply chain modernization influences resilience of farming systems, prosperity of farmers and rural areas. Special attention is paid to organizational innovations and initiatives that try to shape local agricultural and food markets in new ways. It is asked how small farmers succeed to build, sustain, and develop resilient farms in dynamic and often unfavourable conditions. Diverse practices of market, territorial, social and political involvement are identified that assure not only their own existence and development but contribute to viable rural communities and sustainable rural development.

	Case study	Relevance for the questions addressed here
IE	Farmer adoption of a new nutrient management technology	Milk and beef production are the two most important farming sectors in the Republic of Ireland, accounting for around 60% of total agricultural output. Ireland envisages a future for agri-food based on the continued development of the sector where efficient and environmentally-friendly production delivers sustainable export growth on global markets. Achieving this expansion without compromising environmental quality poses a significant policy challenge. The case study is conducted among livestock farmers participating in the Irish Agricultural Catchments Programme over the course of a one-year farming cycle. In the case study, a farm extension agent will promote change and adoption of a new nutrient management technology. Focus is on the role of innovation in the sustainable intensification of grass-based production.
AT	Organic farming and resilience	The innovative farmers in Salzburg are at the heart of developing an alternative approach to modernisation, one that very selectively uses technology, couples it with traditional elements and addresses societal and consumer needs through an 'artisan economy'. Rather than focusing on economies of scale and supplying commodity markets, they focus on economies of scope and niche markets, they search for new business models, around creative ideas that allow them to use their skills and knowledge.
IT	Extensive pig production systems	The Italian case study is about alternative extensive and outdoor pig farming system based on commercial or local pig breeds (e.g. Cinta Senese, Romagnola, Casertana, Apulo-Calabrese, Nero Siciliano, and Sarda). Focus is on the newly established high value-added food chain for Cinta Senese. The food chain combines traditional handcrafted methods with contemporary management and modern technologies and marketing. The Cinta Senese breed represents Tuscan traditional farming and its products are perfectly integrated in the regional gastronomic tradition. For the local population, Cinta Senese products represent an element of prestige and pride. For tourists it represents an extra element of interest and cultural and gastronomic richness that complements the list of products typical of Tuscany.
IL	Rural innovation in global fluctuation: The Arava region case study	The case study is set in the Arava region, just south of the Dead Sea in the desert area of Israel. The region is currently undergoing a major crisis that challenges its traditional sources of resilience. This crisis has sparked a process of deliberation and is already pushing stakeholders to revisit some of their long-standing perceptions and motivations regarding the region and their own role in its prosperity. The analysis examines the new directions for agricultural and rural innovation that individual farmers and regional institutions such as the Arava Research & Development have begun developing and are experimenting with. It explores the process a highly successful farming community is currently pursuing, following a developing regional crisis, the tools available to them and the new ones they are creating in the process.
SE	Peri-urban agricultural transformations in Gothenburg	Focus in the Swedish case study is on the sustainability of developmental trends in agricultural landscapes in a peri-urban region (Gothenburg) and a rural grain farming region (Östergötland). Trends between peri-urban and rural areas are compared in order to identify differences in landscape development and key determinants. Focus is on the system of incentives and regulations and how it affected changes in agricultural land use in the rural and peri-urban regions between 1990 and 2020. Particular attention is paid to assessing the sustainability of landscape and land use in a socio-ecological perspective, considering ecosystem services produced in different land use categories.
TR	Resilience and competitiveness of small ruminant farms in Isparta	The case study region is the Isparta province of Turkey, located in the West Mediterranean Region, which is also known as Lake Region. Isparta is famous for its natural resources, landscape and agricultural production, such as cherries, apples, oil roses and livestock (especially small ruminant). The analysis aims to identify the role of farmer organisations in the resilience of farming, innovation and their competitiveness in the market. Three types of farmer organisations are examined: cooperatives, producers' unions and growers/breeders' unions. Where relevant, also other kinds of farmer organisations are inspected.

biotechnology, biomass energy and bio-based products, and issues revolving around resource depletion.

How does farming contribute to more prosperous rural areas? Cairol *et al.* (2009) emphasized the multifunctionality of rural areas and the central role of farming in the provision of public goods. The findings of this research have been confirmed in a major IEEP study on the provision of public goods through agriculture (Cooper *et al.*, 2009). Olsson *et al.* (2011) showed that biological diversity is crucial for rural viability and agricultural activities. The transformation of public goods in the rural economy was the focus of research led by Bryden *et al.* (2011). IAASTD (2009) found that markets are

necessary, but do not guarantee sustainability of public goods such as food security, conservation of natural resources, or protection and enhancement of the environment. Knickel *et al.* (2009), Van der Ploeg and Marsden (2008), von Münchhausen *et al.* (2010) and Milone and Ventura (2010) emphasized the central role of social capital and of less tangible factors in the dynamics of rural areas. The same authors emphasized the incidence of pluriactivity and income combination as well as the context-dependency and diversity of development trajectories both at farm and at regional level. From these different studies it seems clear that rural prosperity is not just a question of economic performance, and that economic performance is not only connected with agricultural production.

Shaping agricultural development: The role of knowledge

Institutions and networks that are able to combine different types of knowledge and experience, and learn, tend to be more effective in shaping future development. Other attributes favouring a positive development are responsive governance structures, and flexibility in decision-making processes and problem-solving (see **Table 2**). In the ideal situation, the agricultural knowledge and innovation system comprising education, research and farm advisory services is well connected with local knowledge and farmers networks (Moreddu and Poppe, 2013). Knowledge related to natural resources and ecosystems, and their use, includes understandings, interpretations, know-how and resource use practices, all based on long-term interaction with the natural environment (Röling and Jiggins, 1998).

All 14 case studies illustrate the important role local knowledge plays in managing farms and production systems. Local, informal knowledge plays a particular role where farmers emphasise the management of agro-ecological systems and where the aim is to develop more resilient farming systems and practices. Many cases are illustrative of the advantages of more holistic management approaches that combine contemporary managerial and scientific knowledge and approaches with traditional ecological knowledge and thinking. In 'modern' resource management systems, in contrast, traditional and local knowledge tends to be undervalued. The same still tends to be the case in mainstream agricultural knowledge and information systems as well as in current innovation systems and policies. The role of local knowledge is sometimes also diminished by inappropriate policy instruments. Payments in support of organic farming are an example. They have sometimes contributed to a very rapid expansion of farmed area while advisory services, processing and certification were left behind.

And the millions of semi-subsistence farmers in the new EU Member States?

It is often ignored in descriptions of the changes in European farming that agriculture is extremely diverse in farming practices, systems and strategies. Van der Ploeg (1994) was one of the first to emphasize the fact that there exist many different shapes and styles of farming. Multiple job holding, pluriactivity, income combination and semi-subsistence farming have always remained important – despite contrasting views in particular in agricultural economics. Davidova *et al.* (2013) estimate that in 2010, there were 5.8 million semi-subsistence farms in the EU-27. Of these, 61% are in Romania, and about 89% in each of Hungary and Poland. 11% are in Italy, with over 100,000 in each of Bulgaria, Greece and Lithuania. Semi-subsistence farms also comprise a significant share of all holdings in Cyprus, Latvia, Malta, Slovakia and Slovenia. Over the EU-27 as a whole, semi-subsistence farms account for almost half of all agricultural holdings, and about three-quarters of small holdings with less than 2 ha of utilised

agricultural area or under €2,000 of standard output. Davidova *et al.* argue that such a large sector, which provides livelihood for millions of rural inhabitants, cannot be ignored politically: “Many poorer EU-27 member states [...] have large numbers of semi-subsistence farms which provide food for low-income households. The relative rural poverty in some member states, and the hardship stemming from the economic recession, are factors contributing to the in some cases proliferation of semi-subsistence farms.”

Redman (2012) describes subsistence farmers as “idiosyncratic and individualistic; focusing on the wider needs of the subsistence farming community”. He demands that we “discuss intensification with creativity and imagination: knowledge intensive, renewable resource, appropriate technology, communication and cooperation intensive”. Avenues for different pathways of modernization for smallholders and different kinds of innovation need to be developed. Relevant starting points are the (partly overlapping) modernization discourses and practices around small holdings which since the 1990s have been ‘diversification and cooperation’, and then more recently ‘innovation’ (which smallholders have practiced individually and collectively).

The case studies from Lithuania, Latvia and Turkey in particular deal explicitly with the situation of smaller and semi-subsistence farms. In all three cases, it can be seen that smaller and semi-subsistence farms have their particular strengths and weaknesses and that they require different strategies. They make very clear that there cannot be a one-size-fits-all development model for agriculture (see **Table 2**). In some respects it even seems worthwhile to revisit small farmer strategies as they often – not always – point to ways of efficiently using given, local resources that often are renewable and low-emission. Related to policy development, we also need to take into account that today, in most regions across Europe, there are much lesser opportunities in non-agricultural markets and often unemployment is high. A diverse agricultural sector that is closely linked with regional economies and food systems might in the short and medium term be rather beneficial in buffering and simply providing livelihoods for many.

Connecting economic, social and environmental systems

Table 2 provides for each of the 14 case studies a brief characterisation of the way, that practitioners define agricultural and rural development in new ways. The information provided is just indicative of the key findings in the case study report. The table also includes a brief indication of key resilience and prosperity outcomes.

The information provided in **Table 2** indicates that each single case can be seen as an expression of innovative development trajectories, highlighting potential synergies between farm modernization and sustainable rural development. Remarkable too is that each single case, starts with the needs and opportunities of economic, social and environmental systems and the attempt to minimise conflict and better integrate different goals.

Table 2
Key insights obtained in the 14 case studies related to the redefinition of modernization and outcomes

	Case study	How practitioners (re)define agricultural and rural development, and modernization	Some key resilience and prosperity outcomes
AT	Organic farming and resilience	Rather than focusing on economies of scale and supplying commodity markets, farmers focus on economies of scope and niche markets, they search for new business models, around creative ideas that allow them to use their skills and knowledge. These farmers, as 'artisan entrepreneurs', take responsibility for the economic destiny of their farms, which sets them apart from those that feel powerless in the face of global markets and resentfully dependent on direct payments. While the business might grow from 'micro' to 'small', they do not aim for further growth or mass production. They are more likely to network with others, search for social innovation through novel cooperation models, among other with chefs in restaurants or hotels that emphasize the uniqueness of the region.	The approach used is reflective and selective rethinking, questioning both tradition and modernity, seeking to go beyond both, while preserving those elements that serve their purpose. Farmers have a territorial understanding of farming, rather than a sectoral approach, thus seeking cooperation with others in the region. In these cooperations they demand a fair partnership.
BE	New forms of governance in landscape development	Land used for agriculture is the only qualitative open space left and improving and maintaining the quality of this open space is a priority for the quality of life in the area. The governance mechanism adopted allows farmers to be managers of qualitative open space without compromising their incomes. With shared efforts, the farmers, companies and inhabitants collaborate in the development of 'their' landscape.	The voluntary cooperation of farmers, companies and inhabitants is a key success factor and companies contribute to nature development in their region.
CH	Sub-urban food production systems in a Swiss agglomeration	Most initiatives in the case study represent alternative systems, approaches or models of food production, paying stronger attention to social, human and community development processes. Relationship building with consumers and networks, participation and space for knowledge sharing are key. Capacity building and exchange of experience among farmers and processors and organisation facilitators seem to be key success factors as well as knowledge and experience sharing and thus mutual learning	Social value creation and awareness among consumers concerning local agriculture, farming and farm household realities.
DE	Opportunities for creating an eco-economy: Lessons learned from the Regional Action and Bio-energy Regions schemes	'Rethinking' the modernization of farms and rural areas in the case studied refers to valorising renewable resources in ways that are sustainable and adapted to regional conditions. In this development process, new forms of governance – notably expressed in new actor network constellations – play a vital role. The on-farm bio-energy activities accompany the establishment of bio-energy villages that aim at using local resources in smaller-scale distributed systems and establishing cross-sectoral linkages. Key determinants are the kinds of technology, the investment capital needed and suitable forms of governance. Fulfilling the new roles and the new farm-related activities necessitates the establishment of cross-sectoral linkages as well as a substantial amount of 'learning'. In the study region, actors prove to be capable of recognising regional potentials – of the agricultural sector as well as wider rural development – and they are open for novel approaches with regard to securing the future prospects of their rural area.	Bio-energy activities foster diversity at the level of farms, the agricultural sector and the regional economy. Local farmers – in an interplay with other rural actors – contribute crucially to opening up a future perspective for their rural area. Pilot programmes like 'Regional Action – Shaping Rural Futures' (RA) and 'Bio-energy Regions' (BR) were found to be important catalysts.
DK	Landscape strategy making and agriculture	Agricultural modernization in Denmark has for several decades meant concentration, specialization and industrialization of agricultural production. Production has as a result largely been concentrated on few, large farms that are increasingly separated from rural communities while food processing mainly takes place in cities. The significance of non-agricultural functions such as residential, recreational and ecological functions is increasing in importance in territorial decision-making. Collaborative strategic decision-making and planning on a local scale can contribute to a sustainable development towards more resilient agricultural landscapes and counteract the current decoupling of agricultural businesses from the landscape.	Local actors perceive learning not only as an individual process but also as social capital building. Farmers through a collaborative landscape strategy making process can learn to adapt to new knowledge about to the functionality of the landscape as well as to reshape their internal relationship.
ES	Innovation and social learning in organic vegetable production in the Region of Murcia	The Camposeven producer association is based on cooperation, trust and transparency, and on prioritizing quality over quantity. These pillars have allowed adapting to a complex and highly competitive market context. Camposeven is known for its good practices and for pioneering organic farming systems. The association cooperates closely with other companies such as the research group GESPLAN of the Technical University of Madrid. This collaboration is developing professional practice in cooperation with different actors, connecting knowledge and action through joint projects. It stresses the value of experienced knowledge and the integration of joint learning.	Governance, knowledge and learning are in this case study considered almost as tools that result in increased prosperity and resilience. The Camposeven producer association has enabled its members to be more autonomous, also experimenting on their own farms, generating a dynamic of sharing ideas and mutual assistance between partners.

	Case study	How practitioners (re)define agricultural and rural development, and modernization	Some key resilience and prosperity outcomes
FR	Transitions towards ecological production	The ability to combine long-term vision and short-term opportunism has been a skill exemplarily developed in the Drôme Valley. In the territorial agri-food system, stakeholders from farming, marketing, processing and retailing sectors, advisory services, public policies, civil society have a rather collaborative attitude and a long experience of multi-actors projects and governance. From the early 1990s, local policies aimed at turning the valley from the “hinterland of the productivist period” into “a foreland of quality”. Prosperity and resilience are both associated to diversity and diversification in products, in marketing channels and in production modes sometimes (organic, conventional, geographic indications etc.). Direct links to consumers, local authorities and sometimes to school canteens are seen as rewarding by farmers.	Younger farmers who have not known this “golden age” [the past era of prosperity when farmers got much better prices for their products] have a completely different definition of prosperity, rather linked to quality of life and well-being, autonomy in their daily work and in their relationship to the market, coherence with their values and their personal project.
IE	Farmer adoption of a new nutrient management technology	The Republic of Ireland is the largest beef exporter in Europe and the 10th largest dairy export nation in the world. Milk and beef production account for around 60% of total agricultural output. Approximately, 90% of beef output and 85% of dairy output are exported and there is a plan to increase milk production by 50%. Achieving this expansion without compromising environmental quality poses a significant policy challenge. Efficient farm and field level management of nutrients has consistently been found to be an optimal strategy in the management of environmental risk from agricultural production.	Optimal use of expensive fertiliser has the potential to deliver a double dividend of reduced nutrient loss to the wider aquatic ecosystem while maximising economic returns to agricultural production thereby making the farm system more resilient within the farm gate to external shocks.
IL	Rural innovation in global fluctuation: The Arava region case study	The Arava case study demonstrates the ambivalent correlations between farm modernization, regional resilience and rural development. A decade ago, the Arava farmers thrived economically. However, over the past few years they have come to acknowledge a growing crisis as most farms grow pepper (capsicum) using similar agricultural practices. Overall, the region produces about 60% of the total Israeli export of fresh vegetables and agriculture is highly economically dependent on exports to Europe, Russia and the United States with minor distribution in the local market. The recent crisis has placed a strong demand for finding either “the next pepper” or new economic directions altogether. The single crop approach represents a continuation of the old mind set: expecting a single solution that will replace a product that can no longer provide for farmers in the region. One idea is to approach pharmaceutical and biotechnology companies that use certain kinds of plants which the region is especially suitable for growing, aiming to establish completely new regional supply chains.	The Arava R&D Centre looks for ways to commercialize the region’s unique knowledge in farming, to adopt new types of agricultural activity for numerous industries, to support new local entrepreneurship, and to bring in new investors that may help scale up the region’s business activities. The aim is to try out new business models that may help commercialize local knowledge, and create new partnerships that contribute to employment in the region.
IT	Extensive pig production systems	Unlike in intensive indoor farming, pigs in extensive systems are not housed in fixed structures in masonry, but reared in open surfaces of agricultural and/or forest land bounded by suitable fencing systems. Extensive and outdoor systems are also common in other European countries (e.g. Spain, Portugal, United Kingdom, France, and Hungary) with the aim to produce high quality fresh pork and processed products. Successful initiatives require an effective cooperation of all actors of the supply chain i.e. pig farmers, breeders, fatteners, feeding companies, slaughterhouses, processors, advisors, butchers, multiple retailers and restaurants plus veterinary, environment protection and food safety authorities. Multifunctional agriculture is perceived as the backbone of agriculture in Tuscany with direct marketing, organized groups of consumers, a very strong presence of agri-tourism farms and clear rules for the preservation of the typical landscape.	Quality of life in rural areas is linked to a social life characterized by networks, shared norms and expectations that facilitate the ability to get things done collectively and a sense of belonging. The Cinta Senese breed represents the Tuscan traditional farming and its products are perfectly integrated in the regional gastronomic tradition.
LT	Resilient farming systems and market differentiation: Challenges and opportunities in farmers’ markets	Nearly three-quarters (73.3%; 2010) of the Lithuanian farms larger than one hectare are semi-subsistence farms with an economic output of less than €4,000 per year. Among small farms, a flexible use and re-use of resources, and a step-by-step development based on the available local social and natural resources prevail. Farmers’ markets that promote the consumption of local products are becoming more and more popular. One of the reasons, why farmers are only to a limited extent engaged in farm-based processing and direct marketing is the lack of technological, marketing and communication knowledge.	Food markets in Lithuania are becoming more differentiated and a fast growing number of consumers give priority to healthy, authentic and environment friendly produced food.

	Case study	How practitioners (re)define agricultural and rural development, and modernization	Some key resilience and prosperity outcomes
LV	Small farms' development strategies	Small farms, which compose up to 90% of all farms in Latvia, are facing various long-term political, market and socio-demographic pressures, and their number is constantly declining. In the case study, it is argued that diverse practices of small farmers ensure not only their own existence and development but contribute to viable rural communities and sustainable rural development. The examples given show that small-scale farming represents an alternative form of sustainable modern agriculture, where farm modernization reinforces rather than hinders sustainable development, rural prosperity and resilience. Diversity opens up diverse paths for modernization, especially if we consider contemporary societal needs and demands including sustainable provision of food, maintenance of rural livelihoods, environmental conservation and sustainable growth.	Small farms illustrate the holistic multi-faceted and long-term character of prosperity, where farmer, farm, community and territorial levels are interconnected. Farmers interpret prosperity in terms of family well-being, a sufficient level of income, the freedom to organise one's own life and work, the reproduction of natural resources and contribution to community livelihoods through employment and social relations.
SE	Peri-urban agricultural transformations in Gothenburg	The transformation of and contemporary conditions for farming in a peri-urban area is an increasingly important issue. Gothenburg provides an illustration of a more general trend for peri-urban areas regarding land use. The transformation from a rural agricultural landscape with mixed farming systems including livestock and arable production of food for the nearby urban market into a peri-urban landscape with strong imprints of urbanisation puts substantial pressure on farm households. Yes, agricultural production is just one part and has to accommodate leisure demands and facilities for the urban population, among which the horse riding activities are dominating. The demand for land for housing and settlements increases the pressure on agricultural land. This is counteracted by a general municipality strategy of sustainable livelihoods that includes agricultural activities for local food production and active cultural landscapes.	The importance of the different types of ecosystem services demanded in particular in peri-urban areas has changed from mainly provisioning services to mainly cultural services. The study shows that agricultural practices like grazing livestock within a nature reserve can be useful for preserving cultural landscapes, biodiversity related to semi-natural habitats and ecosystem services.
TR	Resilience and competitiveness of small ruminant farms in Isparta	The small ruminant sector in the three provinces Antalya, Burdur and Isparta has been selected because goat and sheep production is traditionally and socio-economically important for the western Mediterranean region. Animal husbandry is based on extensive grazing and the shepherds are generally the herd owners. Social life totally depends on production activities and shepherds are most of the time out of villages with their animals. The main characteristics of the farms are that they still use traditional methods, and the family workforce is the dominant resource. Most of the farmers have taken over from their families and they have been involved in farming since they were children. Recently however they do not want their children to take over their businesses, and young people tend to find jobs in urban areas. At the same time, in the last decade, the goat milk and goat cheese market value has increased because of the increasing demand for "natural", "organic" and "healthy nutrition". Producers who go for product diversification and succeed in marketing tend to have better incomes.	Recent developments in the sector encourage farmers to be organised and keep records. The use of new technologies in small ruminant production is expected to reduce workloads and increase the welfare level of families and their involvement in social life. Farms that use milking machines have a higher productivity with better milk quality, a lower labour intensity, more leisure time and a higher family income.

Synopsis of some key findings from the case studies

It is to be stressed that the insights gained from the 14 case studies can only be indicative of the diverse rural and farming realities across Europe. Yet, some of the findings are in line with other research, and they provide great illustrations of underlying mechanisms. They include:

- Farm structural, natural, social, cultural and economic conditions differ hugely across Europe. Some countries like the Belgium, Denmark, France and Germany have for a long time had very high levels of agricultural investment (and investment support). In those countries, farm and regional-level specialisation might have become too strong ((IAASTD, 2009; Knickel *et al.*, 2014).
- Other countries like Lithuania and Latvia lack investments. Policy instruments that proved effective in the old EU member states might not provide the kind of support needed in these very different situations (Dwyer *et al.*, 2012; Davidova *et al.*, 2013). Support mechanisms therefore need to be sufficiently differentiated.
- Communities and individual entrepreneurs need to be able to deal with changes in markets (the Arava case study), environmental and or climatic changes, the resulting unpredictability and the related new opportunities (the German bio-economy case). Folke *et al.* (2002) emphasize that resilience, and the capacity to adapt to change, are key properties of sustainability.
- Many of our case studies are pointing to the tremendous importance of adaptive management and the need to combine different types of knowledge. In line with our findings, Jiggins and Röling (2000) argued that learning can be enhanced by combining different kinds of knowledge.
- In particular in our case studies in Austria, Germany, France and Latvia, it was emphasised that to enhance resilience is a major concern for farm families as well as rural communities. Milestad and Darnhofer (2003) discussed the features that can be conducive to building farm resilience. Central in their argumentation is that "*sustainable agriculture should not be seen as a set of practices to be*

fixed in time and space, but must include its ability to cope with change". Pretty (1997) and Hinterberger *et al.* (2000) argued that the corresponding skills required are not just the ability to define goals and measures, but also the necessity to continuously deal with uncertainty. Our case studies provide manifold illustrations of this attitude and the related processes.

- The case studies in Israel and Germany in particular, provide an excellent illustration of Joseph Schumpeter's (1943) argument that industries must incessantly revolutionize the economic structure from within, that is innovate with better or more effective processes and products. In the context of our discussion we can translate 'innovating from within' to first, economic innovations can be effectively combined with social and organisational ones, and second, practitioners and their knowledge and experience play a central role.
- Knowledge and learning played a central role in most of our case studies. Usually it was a more diverse group of actors, often led by some very dedicated professionals that managed to cross-sectoral and societal boundaries. This finding is in line with Münchhausen *et al.* (2010) who argue that innovation partnerships and development networks or groups need motivated individuals in lead functions. I like to add that such groups should function as learning vehicles towards more resilient agricultural production systems – and, as I argued earlier, as learning vehicles towards multiple rural modernities. As suggested by Brunori *et al.* (2013) the goal of sustainable agriculture implies a systemic change: Learning and innovation networks can develop innovative patterns of production by generating new knowledge.

Conclusions

More than one trajectory of agricultural modernization

While our 14 case studies can only be indicative of the diverse rural and farming realities across Europe, I think I could show that there is a multitude of trajectories of agricultural modernization and rural resilience. It follows that agricultural and rural development frameworks need to be differentiated according to the particular farm structural, natural, social, cultural and economic conditions in order to be meaningful and effective in the longer term. In particular, in Eastern European member states, more emphasis needs to be given to more fully appreciate given strengths and resources', and the related opportunities.

As a result, of the lack of more appropriate, future-oriented development frameworks, there often appears to be an overemphasis on traditional development models and instruments. Future research needs to focus on more effective support mechanisms for alternative modernization trajectories and resilience pathways, maybe in particular in countries with very capital and resource-intensive agriculture and sometimes an extreme concentration of production. More capital-intensive systems are also often less resilient because farmers are likely to be more indebted and, as a result, vulnerable.

Issues like the role of agency and of enabling institutional structures, the factors that encourage the creation of synergies in agricultural and rural development, and the role of learning networks and knowledge systems in boosting innovation in the small farming sector need to be further explored. Local capacities for transdisciplinary research need to be strengthened to support decision-making in public and private sectors.

Promoting adaptive management concepts

The importance of adaptive capacity is rapidly growing because of the mounting vigour and incidence of global environmental and or climatic change. Communities and individual entrepreneurs need to be able to deal with the related unpredictability. Resilience and the capacity to adapt to change are key properties of sustainability.

More diverse systems tend to be more adaptive and therefore more resilient economically and socially. Mixed farming systems tend to be more resilient than specialized production systems in particular under rapidly changing climatic and market conditions. A sound analysis of the vulnerability of different socio-ecological and farm systems to climate change, and of opportunities for adaptation needs to be the basis for further strategies.

Emphasizing ecological modernization

Ecological modernization is based on the idea that economic systems are likely to benefit from the integration of environmental goals. Environmental productivity relates to a productive use of natural resources. This includes increases in energy and resource efficiency as well as process innovations such as environmental management, sustainable supply chain management or the development of new eco-products and services. Our case studies indicate that the scope of ecological modernization sometimes also includes value orientations and lifestyles. However, research and training still tend to focus on only one particular model of capital-intensive agricultural modernization, and purchased inputs. More research and training are needed that focus on how to use local resources more efficiently.

Terms like 'resilient agricultural growth' and 'sustainable intensification' are an attempt to bring together supposedly conflicting pathways. Ensuring that technologies are appropriate, affordable and effective is vital. Critical too is who decides and who controls technology.

The important role of learning and social capital in innovation networks

Innovation partnerships and development networks or groups need to function above all as learning vehicles towards more resilient agricultural production systems. The goal of sustainable agriculture implies a systemic change, and this systemic change often requires the combination of new knowledge with rural actors' experiential and local knowledge. Many grassroots

initiatives have relevant experiences. For the same reason, more emphasis should be on the potential of social innovation and social learning to achieve on-going adaptive changes. This needs to include effective governance mechanisms that nurture learning processes.

Related to the implementation of the new European Innovation Partnership 'Agricultural Productivity and Sustainability' (EIP-AGRI) at EU member states and regional/local level it seems critically important that administrations find ways to enable motivated individuals and civil society action. Focus should be on supporting future-oriented investments that maximize added value *within* agriculture and rural areas. In particular, the Latvian and Lithuanian case studies indicate that rediscovering the value and potential of the small farming segment and boosting collaborative innovations is in many areas an important part of that. Administrations need to level the agricultural playing field where capital-intensive sectors dominate. The main challenge for agricultural knowledge systems is to be open-minded and responsive.

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CHALLENGES TO SUSTAINABLE RURAL DEVELOPMENT IN RUSSIA: SOCIAL ISSUES AND REGIONAL DIVERGENCES

Olga Lisova¹ – Vasily Erokhin² – Anna Ivolga³

¹ Vice – rector in additional education Stavropol State Agrarian University, 12 Zootekhnichesky Side-Street, 355017 Stavropol, Russia, Phone: +78652355980, E-mail: olga_lisova@bk.ru

² Ph.D., Department of Management and Marketing, Moscow University of Finance and Law, 8, build. 1, Presnenskaya Embankment, 115114 Moscow, Russia, Phone: +74999951963, E-mail: basilic@list.ru

³ Ph.D., Department of Tourism and Service, Stavropol State Agrarian University, 12 Zootekhnichesky Side-Street, 355017 Stavropol, Russia, Phone: +78652355980, E-mail: annya_iv@mail.ru

Abstract: Paper aims at investigation of contemporary approaches to sustainable rural development in Russia. It includes the overview of current experiences in rural development, analysis of major economic and social indicators of rural areas in comparison with urban ones. Analysis included the set of indicators such as number of rural people, number of rural settlements, rates of births and mortalities, natural and migration increases and declines of population, rates of employment and unemployment, average monthly nominal per capita wages, and level of the subsistence minimum. Indicators have been measured separately for rural and urban areas; regions have been grouped in relation to the particular indicator. The research is concluded by discovery of growth points for rural development and a set of recommendations on perspective measures of state and local policies in rural areas, directed on increase of living standards of rural population and retention of labour resources in their traditional rural areas of inhabitation.

Keywords: sustainable rural development, region, rural areas, income level, employment, diversification, urban agglomeration (JEL: Q18, P25)

Introduction

Rural development, aimed at improvement of quality of life, is the key factor of sustainable growth of agricultural production effectiveness, as well as social stability in rural areas. Agriculture, as the primary industry in rural areas, is the major (and often the only one) source of employment and income for rural people. It directly influences economic, social, and demographic processes in rural territories, affects land settlement and reclamation, and ensures maintenance of territorial and cultural integrity of the country (Ivolga, Uryadova, 2010). Consequently, state policy in the sphere of agriculture should be proceeded from sustainable development of rural areas, based on economic, social, and environmental approaches.

Over 1990-2000s there were certain reforms implemented in agricultural production and land relations in Russia, including the rural development. Those reforms let to stabilize situation in rural areas during transition period. However, current conditions of economic development require new approaches to rural areas in order to ensure their economic, social and environmental sustainability. Rural areas lag behind urban ones in terms of living standards and

quality of life. Gaps in infrastructural development between rural and urban (even suburban) areas are continuing to grow. Number of rural settlements goes down because of huge migration outflow from rural areas to cities. Migration brings together ageing of population, lack of labour of high qualification, degradation of population, growing social tensions, abandonment of rural settlements and agricultural lands, lowering effectiveness of agricultural production, and growing environmental load because of outdated machineries and low culture of farming.

That is especially relevant for areas contiguous to big cities. On the face of it, such predominantly non-rural areas are in the better position in comparison to the rural ones, since the major economic indicators (income level, labour inflows, employment rates, etc.) are higher. However, that is primarily because of employment opportunities in the spheres, not related to agriculture (trade, services, etc.) or commuting of people from surrounding rural settlements to urban centres. In such a situation sustainable development of traditional agricultural production and rural way of life is even in a bigger danger, despite the higher attractiveness of those “pseudo-rural” areas.

Material and Methods

There are various approaches to understanding sustainable development. UN World Commission on Environment and Development (WCED) recognises sustainable development as a one, which meets the needs of the present without compromising the ability of future generations to meet their own needs (WCED, 1987, p. 43).

The essence of sustainable development is to harmonise ecological, social and economic interests of present and future generations, and as such, it is very applicable to rural areas. International practices and success stories in the sphere of rural development are studied in the works of W. Heijman (regional competitiveness and regional issues of economic development), (Heijman, Schipper, 2010; Heide, Heijman, 2012; Bronisz et al., 2008), J. Andrei (cases of Eastern Europe in general and Romania in particular), (Erokhin, Ivolga, Andrei et al., 2014) and D. Cvijanovic and P. Vuković (investigations of perspectives of rural tourism in separate localities of Serbia and other Danube countries) (Cvijanovic, Vukovic, 2012).

Mannion (1996) emphasises two approaches to sustainable rural development. The first is a top-down approach, when various programs of rural development are initiated by the governmental bodies. The second is a bottom-up approach that involves an active engagement of local communities in decision-making, development and implementation of strategies for sustainable rural development. Therefore, for the purposes of the current research we have primarily addressed the works, related to analysis of local characteristics of rural development and unique economic, social and environmental features of certain regions.

The research of contemporary issues of sustainable rural development was conducted on the case of Russia. Such authors as Merzlov et al. (2012), Rusinova (2011), Lavrukhina (2013), Vuković et al. (2012) discuss how to successfully manage rural development on the case of economies in transition, including Russia. In relation to Russia we also studied approaches to sustainable rural development through small and medium entrepreneurship in rural areas and intensification of agricultural production (Bondarenko, 2011; Trukhachev, Lescheva, 2010). The special attention was paid to integration of agricultural producers (Lescheva, 2007; Lescheva, 2008) and diversification of income opportunities in rural areas by means of alternative employments, rural tourism and related activities (Ivolga, Erokhin, 2013; Jelocnik, Ivolga, 2012; Ivolga, Belak, 2013; Kundius, Chermyanina, 2011; Ivolga, Mikhaylova, 2013).

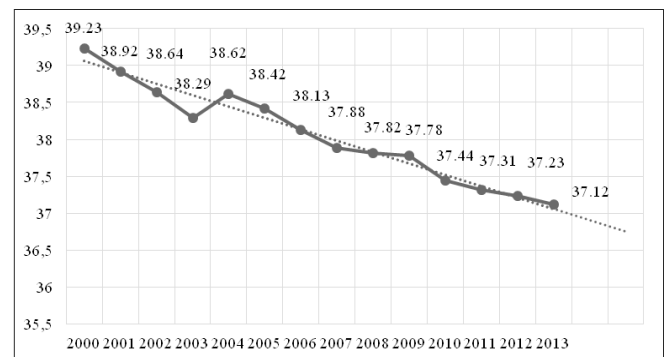
Taking into account the essential differences between various regions of Russia in terms of provision with natural, social and labour resources, development of rural infrastructure, and environmental conditions of agricultural production, we studied all 83 administrative regions of Russia, aggregated into eight federal districts. Assessment was made using the set of seven parameters (number of people, number of rural settlements, rates of births and mortalities, natural and migration increases and declines of population, rates of

employment and unemployment, average monthly nominal per capita wages, and level of the subsistence minimum). Based on the results of calculation, 83 regions have been grouped into four types and nine subtypes (each was given its name) depending on the character of rural development, utilization of available agricultural and environmental resources, level of social and demographic development, and threats to sustainable development of rural areas. The map of Russia's regions was developed by the authors and presented as a result of the paper. Also, a classification let authors to discover both common threats to sustainability and regional specifics of rural development.

Results and Discussion

Rural population in Russia accounts 37.1 mln people, which is about 26% of total population. Working-age rural population is 21.4 mln people. There are 153.1 thousand settlements located in rural territories; over 133.7 thousands of them are permanently inhabited. Herein, 73% of rural settlements have less than 200 inhabitants, while settlements with over two thousand residents account only 2% (State Council of the Russian Federation, 2014). Since 2000, rural population in Russia decreased by 5.4% (from 39.23 mln people down to 37.12 mln people) (Figure 1). The linear trend shows further population decline in 2014-2015 (down to 36.5 mln people by 2015).

Figure 1. Rural population in Russia in 2000-2013, mln people.



Source: Author's calculations based on data of State Council of the Russian Federation, 2014

In terms of the regions of Russia, the most essential rural population decline was observed in North-West and Siberian federal districts (NWFD and SibFD correspondingly). Share of NWFD in overall rural population of Russia decreased from 6.5% in 2000 down to 6.0% in 2013, share of SibFD decreased from 15.1% down to 14.3% correspondingly.

Despite the serious structural changes, economic and social conditions of rural areas in Russia remain complex. Levels of unemployment and poverty are two times higher in comparison to urban areas; while rural labour compensations are two times lower than the ones in other industries. Because of lower living standards, existing infrastructural problems and high unemployment people migrate to urban areas (Table 1).

Table 1. Number of rural inhabitants in Russia in 2000-2013, thousand people.

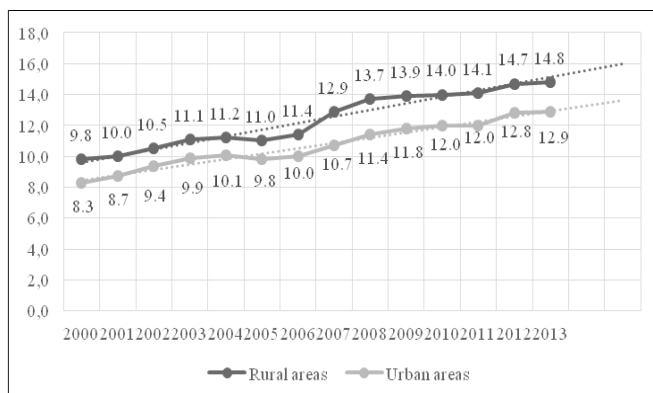
Years	Population, beginning of the year	Variation (+, -):				Population, end of the year
		gross increase	natural increase	migration increase	territorial transformations	
2000	39470.6	-238.7	-274.2	-2.6	38.1	39231.9
2001	39231.9	-307.9	-271.7	-51.9	15.7	38924.0
2002	38924.0	-281.6	-281.9	-26.7	27.0	38642.4
2003	38642.4	-348.3	-281.5	-90.5	23.7	38294.1
2004	38294.1	324.8	-260.3	-108.8	693.9	38618.9
2005	38618.9	-200.9	-287.6	-117.4	204.1	38418.0
2006	38418.0	-287.0	-230.4	-109.0	52.4	38131.0
2007	38131.0	-248.6	-145.7	-50.9	-52.0	37882.4
2008	37882.4	-60.7	-113.3	-60.6	113.2	37821.7
2009	37821.7	-49.6	-88.9	-47.8	87.1	37772.1
2010	37772.1	-327.9	-81.7	-228.8	-17.4	37444.2
2011	37444.2	-129.8	-42.5	-149.9	62.6	37314.4
2012	37314.4	-85.6	-6.3	-166.6	87.3	37228.8
2013	37228.8	-110.6	-0.8	-176.8	67.0	37118.2

Source: State Council of the Russian Federation, 2014.

Number of rural settlements in 2010 (the latest census) decreased on 9.2 thousand in comparison to 1989, while the number of depopulated rural settlements increased from 9.4 thousand up to 19.4 thousand. According to the All-Russian research institute of rural economy (VNIIESH), over one third of rural people consider an opportunity to leave rural areas in favour of cities. Among young people that share is even bigger – up to a half (Bondarenko, 2011).

Migration outflow is the major reason of depopulation of rural territories in Russia. Despite the certain natural increase (Figure 2), social and economic components dominate over the natural one.

Figure 2. Crude birth rate indexes for rural and urban areas of Russia in 2000-2013, permille.



Source: Author's development based on (State Council of the Russian Federation, 2014)

That is not exclusively Russia's situation. Similar processes are observed in other countries. For example, USA and EU

countries lose up to 5% of their rural population within 3-5 years (Lavrukhina, 2013). Low prestige of rural life, high risks of agricultural production, and poor perspectives of rural activities in terms of career development and income lead to migration of people from rural areas worldwide.

Over the last 14 years the number of rural inhabitants in Russia decreased on 2.4 mln people, whilst losses because of natural and migration factors were 3.8 mln people. Population decline was mainly caused by excess of mortality over fertility (63%). Activation of demographic policy in recent years decreased natural decline in the population. However, migration outflow grew substantially and became the main reason of depopulation in rural areas.

Nowadays problem of depopulation is the most severe in Kostromskaya, Tverskaya, Yaroslavl'skaya, Vologod'skaya, Pskov'skaya, Kirov'skaya, and Magadanskaya oblasts. Over one fifth of rural settlements in those regions is depopulated and deserted (Merzlov et al., 2012). Structure of economically active population in rural areas in 2012-2013 was improved; share of unemployed people revised from 9.6% in 2012 down to 8.5% in 2013 (Table 2).

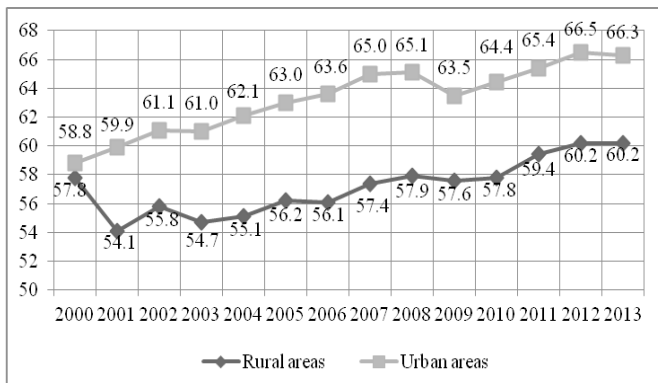
Table 2. Economic activity and employment of rural population in Russia in 2012-2013, thousand people.

Indicator	2012	2013	Variation (+,-)	2013 in comparison to 2012, %
Total population, the 15 to 72 age bracket, thousand people	27524	27524	-	100.0
Economically active population, thousand people	18100	18081	-19	99.9
including:				
employed, thousand people	16561	16579	18	100.1
employed, %	91.5	91.7	0.2	
unemployed, thousand people	1540	1502	-38	95.7
unemployed, %	8.5	8.3	-0.2	
Inactive population, thousand people	9424	9443	19	100.2

Source: State Council of the Russian Federation, 2014.

In 2000-2013 employment in rural areas was essentially lower in comparison to cities. There is an overall growth of employment rate, observed both in rural and urban areas in 2000-2013, however the growth rate for urban areas is threefold bigger, than in the rural ones. Employment rate for urban areas in 2013 gained 7.5 percentage points in comparison with 2000, while the one for rural areas – only 2.4 (Figure 3).

Figure 3. Employment levels in rural and urban areas of Russia in 2000-2013, %.



Source: State Council of the Russian Federation, 2014.

Level of employment decreased in North-Caucasus and Privolzhsky federal districts to the utmost. North-Caucasus federal District has the highest unemployment rate – 14.3%. Unemployment levels in rural areas of Siberian and Far East federal districts exceed international standards as well (Table 3).

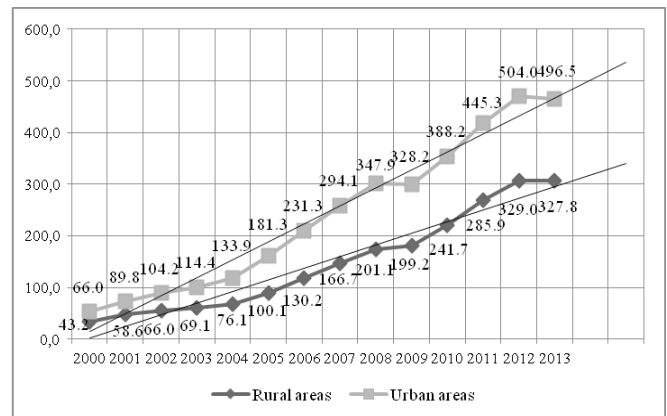
Table 3. Number of unemployed people and overall level of unemployment in rural areas of Russia, average of reference period.

Federal district	Number of unemployed people, thousand people			Level of unemployment, %		
	2012	2013	2013 to 2012, %	2012	2013	Variation (+, -), p.p.
Russia, total	1540	1502	97.5	8.5	8.3	+0.2
Central Federal District	184	190	103.0	5.3	5.4	0.1
North-West Federal District	90	87	96.7	7.9	7.9	0.0
South Federal District	199	203	102.0	8.0	8.2	0.2
North-Caucasus Federal District	354	326	92.1	15.8	14.3	-1.5
Privolzhsky Federal District	281	264	94.0	6.6	6.2	-0.4
Ural Federal District	107	86	80.4	9.1	7.3	-1.8
Siberian Federal District	241	259	107.5	9.5	10.3	0.8
Far East Federal District	84	87	103.6	10.9	11.0	0.1

Source: State Council of the Russian Federation, 2014

Income gap between urban and rural territories is permanent over the referred period of 2000-2013– about 150% (Figure 4).

Figure 4. Dynamics of average per capita disposable income in rural and urban areas of Russia in 2000-2013 and liner trends to 2015, euro per month.



* Presented financial numbers are real, inflation is considered (Rosstat, 2014). All financial numbers are calculated in Euro based on average Euro-Ruble ratios for each year.

Source: Author's development based on (State Council of the Russian Federation, 2014; Rosstat, 2012; Rosstat, 2014; Central Bank of the Russian Federation (2014)).

Absolute amounts of per capita disposable incomes had been considered based on data of the State Council of the Russian Federation, 2014, adjusted for inflation (Rosstat, 2014) and recalculated in Euro (Central Bank of the Russian Federation, 2014). Despite its growth over the referred period, income level for rural areas is still very low. The linear trend developed to 2015 hardly reaches €350, while an average disposable income in urban areas is expected to exceed €550 in 2015.

Overcoming differences between urban and rural areas in income level in particular and in economic, technological, and social development in general should become the strategic trend of rural policy in Russia. People will migrate back to rural areas from cities only in case they are aware of certain level of income, as well as infrastructure, comparable to urban conditions.

As of today, almost a half of regions in Russia (47%) are not favourable for sustainable rural development. Some of the regions are even considered as depressed ones, with various symptoms of economic downturn and social depression. Those regions concentrate about 64% of rural population of Russia (Merzlov et al., 2012).

Table 4. Average monthly nominal per capita wage in rural areas of Russia*.

Indicator	2000	2012	2013	Variation: 2013 to 2000, %, (+, -), p.p.	Variation: 2013 to 2012, %, (+, -), p.p.
Average national, Euro**	83.35	657.66	706.77	845.92	107.47
Average in agriculture, Euro**	36.93	348.95	368.88	998.86	105.71

Indicator	2000	2012	2013	Variation: 2013 to 2000, %, (+, -), p.p.	Variation: 2013 to 2012, %, (+, -), p.p.
relation to national average, %	44.31	53.06	52.19	7.88	-0.87
absolute variation, Euro	46.42	308.71	337.89	291.47	29.18

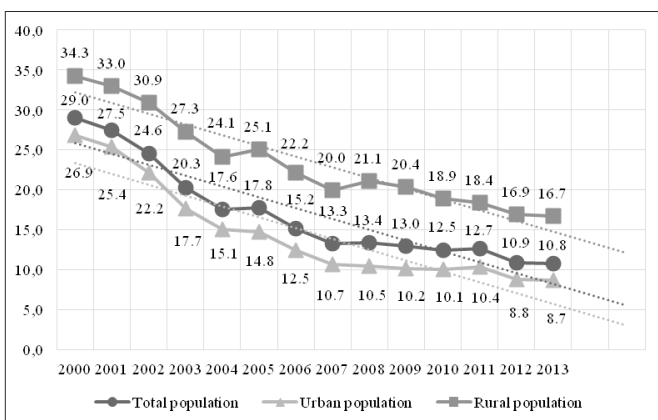
* Presented financial numbers are real, inflation is considered (Rosstat, 2014).
 ** Author's recalculation into Euro based on (Central Bank of the Russian Federation, 2014).

Source: Author's development based on (State Council of the Russian Federation, 2014; Rosstat, 2014; Central Bank of the Russian Federation, 2014).

As to the income-subsistence ratio itself, it increased over the referred period. In the majority of regions the per capita disposable income of rural households exceeds the level of the subsistence minimum at least twofold. Leaders are Moscow Oblast (threefold), Belgorod Oblast (3.4 times), and Leningradskaya Oblast (3.8 times). Outsiders are Republic of Dagestan, Republic of Chechnya, and Republic of Tyva.

Total number of people living below the poverty line was 15.6 mln in 2012; share of those people in total population was 10.9% (State Council of the Russian Federation, 2014). Over 2000-2012 number of people with income below the minimum subsistence level decreased almost threefold. Rural people amount to 40.4% of all Russia's population living below the poverty line (Figure 5).

Figure 5. Share of population living below the poverty line in Russia in 2000-2013, %.



Source: Author's development based on (State Council of the Russian Federation, 2014)

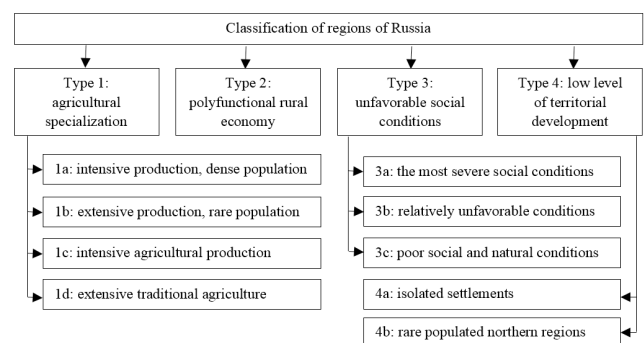
Considering the existing essential differences between regions of Russia in the sphere of rural development, social and demographic potential, development of infrastructure, employment, income levels, and natural conditions, it is worthwhile to group the regions by types. Based on the works of Merzlov and other researches (Merzlov, Ovchintseva and Popova, 2012; Merzlov et al, 2012) and own calculations of seven parameters for 83 regions of Russia, authors grouped 83 regions of Russia into four types and nine subtypes depending on the character of rural development, utilization of available agricultural and environmental resources, level

of social and demographic development, and threats to sustainable development of rural areas (Figure 6).

Regions of Type 1 are the major agricultural and rural zones of the country. They have predominantly agricultural specialization of their rural territories and favorable natural, environmental, and social conditions of sustainable rural development. Those regions, while accommodating 18% of Russia's territory, amount to 64% of total rural population of the country and about 60% of the national gross agricultural production.

Type 2 includes regions with diversified rural economy, agricultural production of a suburban type and favorable social conditions. There are only two regions in Russia, which are closely connected to the biggest urban agglomerations of Moscow and Saint-Petersburg (Moscow and Leningrad Oblasts correspondingly). Such proximity conditions strong orientation of agricultural production on urban markets, developed rural infrastructure of a suburban type, high migration attractiveness, growing share of services and non-agricultural activities in rural employment, and intensive utilization of recreational resources. Agricultural production is predominantly concentrated in big agricultural organizations and integrated complexes (Trukhachev and Lescheva, 2010). Potential of sustainable rural development is preconditioned by the highest migration attractiveness of those regions in Russia, opportunity to use urban infrastructures and to get better employments in the cities, proximity of high-capacity urban markets with developed distribution and transport infrastructures. However, those advantages easily pass into threats to sustainable rural development, particularly to land tensions, shortage of natural and environmental landscapes, high pollution, high costs of production because of growing prices for land and labour, and migration of the qualified labor resources to cities.

Figure 6. Classification of regions of Russia on the level of rural development.



Source: Author's development based on (Merzlov, Ovchintseva and Popova, 2012; Merzlov et al, 2012).

Regions of the Type 3 have unfavorable social conditions for the purposes of sustainable rural development and vast zones with attributes of economic and social depression. The major common characteristics of those regions are depopulation and social degradation of rural areas, as well as the growing gaps between living standards in rural and suburban areas. The

regions of Type 3 occupy one fifth of the Russia's territory and provide about one fourth of national gross agricultural production. However, this share in gross production is getting shortened.

The rest of the regions are related to the Type 4. Those are northern and eastern parts of the country with area of 62% of Russia's territory and population of only 6% of total population. The regions are not heavily involved in agricultural production, and their impact into the national gross agricultural production is very small. Subtype 4a includes regions of northern part of Russia and Far East. Rural people in those regions are employed in forestry and mining. Agricultural production is supported by regional and federal budgets. Bankruptcy of forest-industry enterprises, high unemployment and migration outflow create serious threats to development of rural areas.

The map of regions of Russia on the level of their rural development is presented on Figure 7. Regions of Type 1 ("Agricultural") are those of the Central European part of Russia, Northern Causasus, and Western Ural. Type 2 ("Polyfunctional") includes two regions of the largest Russia's urban agglomerations: Moscow and Leningradskaya Oblasts. Regions of Northern and Eastern Ural, Southern Siberia and Southern Far East are included into the Type 3 ("Unfavorable"). The remaining part of Russia's regions (Northern and Eastern Siberia, Northern Far East) has rather severe conditions for agricultural production.

Figure 7. Map of Russia's regions on the level of rural development



Source: Author's development

Regions of the Type 1 are characterized by the growing role of agricultural production in rural development (upon condition of modernization of traditional agricultural production). In order to ensure sustainable rural development in those regions it is necessary to promote introduction of innovation into agriculture, diversification of rural economy, infrastructural development of rural areas, and alternative sources of income for rural people, including in the areas, not related to agriculture.

Regions of the Type 2 are characterized by the highest convergence of rural and urban areas, outrunning growth of services and recreation up to supersession of traditional agricultural activities, and absorption of labour resources by urban and suburban areas.

Group 3 includes regions with the severest economic and social depression of rural areas. The biggest constraints of sustainable development of rural areas in those regions are shortage of labour resources and underdeveloped infrastructure.

Regions of the Type 4, occupying the biggest territory, have the smallest share in total rural population and national gross agricultural production. Those regions are very rarely inhabited, and are very risky for any kind of agricultural production, except traditional hunting, fishing and animal breeding of local ethnic groups.

Conclusions

The above presented classification, however, still does not reflect the whole range of differences between rural areas in Russia. Internal regional differences are sometimes even stronger, than the interregional ones. That very much depends on a number of factors, including economic, social, environmental, geographic, historic, cultural, and ethnographic. That is why elaboration of strategic directions of rural development and related state and regional policies has to consider both existing interregional differences and internal identities of every district and even settlement.

As our analysis shows, many Russian experts (Lavrukina, 2013; Lescheva, 2008; Bondarenko, 2011; Erokhin, Ivolga, 2012) acknowledge the systemic crisis in agriculture, which is partly a result of economic reforms, occurred in Russia in 1990-2000s, partly a consequence of global tendencies of growing population and issues of food security. Those issues stipulate increasing attention to rural territories as a source of agricultural commodities and food. However, current situation cannot be changed at once. Attractiveness of rural areas and effectiveness of agricultural production cannot be increased with just a bigger amount of investments. Rural way of life is a social paradigm, which is developed under an influence of a whole set of non-economic factors: social, cultural, historical, ethnic, etc.

Classification of regions on the level of rural development is necessary in order to determine priority zones for development and directions of support. Permanent structural shifts in rural employment and drain of skilled labour resources from rural areas call for diversification of rural economy, support of small and medium businesses, development of cooperation of farmers and integration of big agricultural producers, and promotion of non-agricultural job alternatives in rural areas (tourism, services, etc.).

The set of measures to be considered by the next Rural Development Strategy 2030 includes implementation of rural development issues into the national and regional development strategies; consideration of tasks of sustainable rural development in the rural area planning schemes; improvement of rural infrastructure, including transport and communications; analysis of environmental problems and existing threats to sustainable environmental development; elaboration of measures to secure biodiversity; expand special support measures, such as for young people and families, in order to retain them in rural areas; increase of investment attractiveness of rural areas in

general and rural settlements in particular as local centers of rural development.

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ECONOMIC RESULTS OF CROATIAN FARMS

Vesna Očić¹ – Branka Šakić Bobić¹ – Mario Njavro¹

¹ University of Zagreb Faculty of Agriculture, Svetošimunska 25, Zagreb, Croatia
(vocic@agr.hr)

Abstract: The objective of the paper is to provide an overview of the situation and performance of Croatian farms. Croatian farmers rarely keep business books and therefore farm level business data are deficient. Croatian accession to the European Union in 2013 brought numerous innovations to agricultural sector. One is introduction of Farm Accountancy Data Network (FADN) which aims to determine the impact of the Common Agricultural Policy on national agriculture of EU member states. The sample of Croatian FADN comprises 1,250 commercial farms. The paper brings results of agricultural sector financial analysis for the period 2011-2013. Total farm output decreased, but since the stronger decrease trend occurred in total inputs, this led to positive trend of gross and net farm income in the year 2013. Positive results are also shown at efficiency and productivity of Croatian farms. In the years 2011 and 2012 farms operated below the efficiency level while in 2013 efficiency increased above the efficiency level. In the observed period there was a 70% increase in productivity. The analysis shows that the most efficient farms are those in vegetables and flowers type. It also has the highest debt ratio due to their capital intensiveness. The vegetable and floriculture farms have the largest gross farm income in all three analysed years, but with a large drop in 2013, while the farms in type pigs and poultry have largest increase of gross farm income in last observed year.

Keywords: FADN, Croatia, economic results

Introduction

Half of Croatian farms have less than 2 ha of arable land. The average economic size of the farm established on the basis of total production value and expressed as a standard output per farm amounts 9,065 €. Almost 40% of the farms belongs to the economic size class up to 2,000 €, while almost 23% belongs to the type mixed crop and livestock (Eurostat Pocketbooks, Agriculture, forestry and fishery statistic, 2013). Prices of agricultural products in 2013, in comparison to the previous year and observed for the average producer prices, declined by 6.2% while prices of goods and services for current use (inputs) in 2013, decreased by only 0.1%. The agricultural sector in Croatia participates with 4.3% in the GDP. Compared to the year 2012, the GDP of agriculture, forestry and fishery products in 2013 decreased by 1.6% (Ministry of Agriculture, 2014). In the EU, incomes differ between the various types of farming - granivores having the highest incomes, and mixed farms the lowest (Hill and Bradley, 2015). Average Farm Business Income is expected to fall or remain broadly similar across all farm types. This is due to lower prices for key outputs such as milk, cereals, eggs and meat, offset to some extent by lower input costs, particularly for animal feed, fuel and fertiliser (Forecast of Farm Business Income by type of farm in England – 2014/15, 2015). Despite the recovery from the low point in 2009, real factor income for EU agriculture is characterised by a long-term downward trend. (EC DG-AGRI, 2014). Total agricultural factor income in real terms deteriorates as production costs grow at a faster pace than output prices. Agricultural land in

the EU has seen a slight reduction over time. (EC DG-AGRI, 2014). The average size of farms covered by the FADN survey was 33 ha in 2012. However, it varied considerably across Member States, ranging from 521 ha per farm in Slovakia to 3 ha per farm in Malta. The EU-27 average farm net value added (FNVA) increased by 2.7 % from 2011 to 2012, mostly due to increase in agricultural output (especially in the value of animal output) and prices. Farms specialised in granivores had the highest output of all farm types in the EU-27. On the other end of the spectrum, farms specialised in permanent crops other than wine generated the lowest output. Grazing livestock farms recorded the highest average loss per farm (EUR -8,100). As concerns average direct payments per holding, farms specialised in field crops benefitted most from subsidies (EUR 15,300 per farm), followed by dairy and grazing livestock farms (EUR 15,200 and EUR 14,600 per farm). On the other hand, the horticulture sector received, on average, the lowest amount of subsidies (EUR 2,700 per farm). The most subsidised field crop farm received more than five times more subsidies than the least subsidised horticultural farm (EC DG-AGRI, 2015). The average amount of direct payments received in 2012 was EUR 9,140 per farm. The proportion of direct payments in total revenue (output value plus subsidies minus taxes) in the EU-27 decreased from 11.9 % in 2011 to 11.2 % in 2012 as total farm receipts increased. Irish, Greek and Finnish farms' total receipts were proportionately most dependent on subsidies. On the other hand, direct payments represented only 3.5 % of total receipts in the Netherlands. Farms specialised in granivores, dairy and horticulture had, on average, the highest total liabilities (EUR 206,500; EUR

96,700 and EUR 91,300, respectively), while permanent crop holdings recorded the lowest liabilities in 2012 (EUR 7,500). (EC DG-AGRI, 2015).

Methodology

The Farm Accountancy Data Network (FADN) was established in 1965 in the EU, when the Council decision 79/65 determined a legal basis for the organization of the system. FADN is based on an annual collection of production, economic and financial data from a sample of farms, classified into groups according to the criteria of economic farm size, type of agricultural production and region. With Croatian accession to the EU in 2013 the annual FADN survey by common FADN methodology and with the goal to determine the amount of agricultural producers income and the effect of CAP on them has become mandatory. The research involves commercial farms on voluntary basis. The first FADN survey in Croatia took place in 2008 when the FADN pilot sample counted 86 farms.

The analysis is based on FADN survey in the period from 2011 to 2013. The sample for the year 2011 was 754 commercial farms, for the year 2012 sample comprised 1,010 farms and for year 2013 there was 1,276 of them, representing approximately 85% of the used agricultural land, 89% of the value of agricultural production and 86% of the livestock units.

Production and farm business results at national level and at the level of farm type are analysed. Results for 7 farm types (Crops, Vegetable and flower, Permanent crops, Dairy cattle, Cattle, sheep and goats, Pigs and poultry and Mixed types) are presented. The following have been taken into consideration:

Total utilized agricultural area (UAA) which represents the total area of the property or the lease of holder and/or member of the farm in the observed period, in hectares. The UAA does not include the area covered by forests and other agricultural land (roads, ponds, economic yard, etc);

Total livestock units (LU) which is the total number of head in all categories of livestock in the observed period, expressed in conditional head of livestock. Conditional head of animal or group of same animals (eg. dairy cows) weighing 500 kg;

Stocking density (LU/ha) is the average number of livestock in the observed period per hectare UAA, calculated as the average number of livestock units of cattle, sheep and goats per hectare under forage crops and fallow;

Total output is the total average income of crop and livestock production, including products consumed on the farm to feed livestock in the observed period, in HRK;

Total inputs which represent the consumption of various goods (materials, time, money, and knowledge) required for the development of a product or service that will be realized from the sale at the market. Include average specific costs of crop and livestock production, depreciation, overhead costs, the amount of wages, paid rent and interest paid on debt, denominated in HRK;

Gross farm income is the average value of total sales plus paid support (without investment support) and minus intermediary consumption expressed in HRK;

Net added value is the average value obtained by subtracting the average depreciation expenses from gross income, expressed in HRK;

Farm net income is the average value obtained by summing the net value added and investment grants and less the average cost of wages, paid rent of land and facilities and interest payments denominated in HRK;

Efficiency coefficient (total output/total input) which represent the ratio between total revenue and total costs of production, and tells how many units of revenue can be produced with a unit of cost. The efficiency level is 1;

Productivity is gross farm income per hour of work. The labour input represents a total work on the family farm (holder and the members of the family farm) together with the paid and unpaid work, and permanent and temporary workforce in the observed period, expressed in hours of work;

Level of debt (%) shows which percentage of assets is purchased by borrowing, and represents the ratio of total liabilities and total assets. The value should be less than 50%;

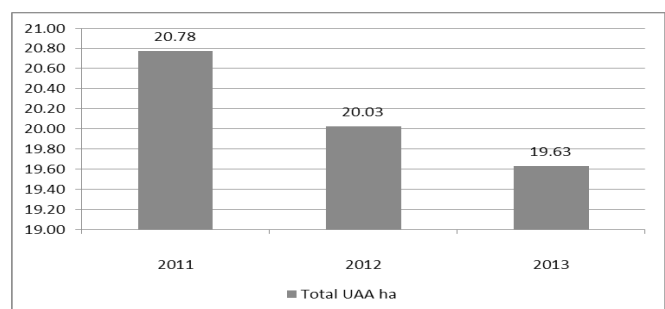
Total subsidies, excluding investment subsidies is the average total grant without investment support, including direct payments, rural development measures and other aid paid in the observed period in HRK;

Direct payments are the average total direct payments in crop and livestock production paid in the observed period in HRK.

Results and Discussion

The total utilized agricultural area per farm (UAA) from 2011 to 2013 was decreasing (6% less in the 2013 than in 2011). Decreasing is especially visible in cattle, sheep and goats type, where UAA decreased from 44.20 ha in 2011 to 23.35 ha in 2013.

Graph 1 The total utilized agricultural area in Croatia, ha/farm



Source: Croatian FADN Standard Results 2011-2013

Rented land per farm showed even more significant declining trend (20.31 hectares in 2011 to 16.16 hectares in 2013), resulting in a drop of 32%.

Number of cattle livestock units per farm is reduced and in 2013 compared to 2011 decreased by 44%. Stocking density, which increase in 2012, in 2013 decrease by 2% compared to 2011.

Table 1 Livestock units per farm in Croatia

Year	2011	2012	2013
Total livestock units	17.34	13.87	12.02
Stocking density (LU/ha)	1.84	1.92	1.80

Source: FADN Standard Results 2011-2013

The farm income from crop production accounted for more than 50% of total farm income, except in the year 2012 when it participated with 48%. Total farm output showed a decreasing trend, but with a simultaneous decrease in total inputs, which leads to a positive trends of gross and net farm income in the year 2013.

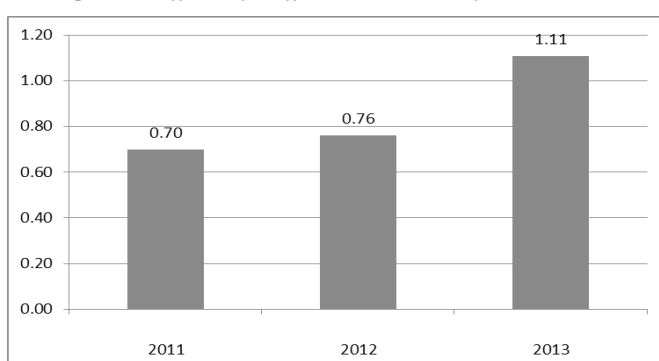
Table 2 Total output, inputs, gross and net income

Year	2011	2012	2013
Total output, kn	438,754.98	398,802.39	248,753.48
Total inputs, kn	627,996.78	523,565.99	224,555.21
Gross farm income, kn	88,485.19	86,174.63	133,988.98
Net added value, kn	40,820.22	46,135.70	89,209.11
Farm net income, kn	23,377.70	9,211.93	65,384.45

Source: FADN Standard Results 2011-2013

The efficiency coefficient on Croatian farms shows a positive trend. In the years 2011 and 2012 the farms were operated below the efficiency level, but with a slight increase in 2012. In the year 2013 there was a significant increase in efficiency to 1.11, which is above the efficiency level and indicates that farms operate with a certain profit.

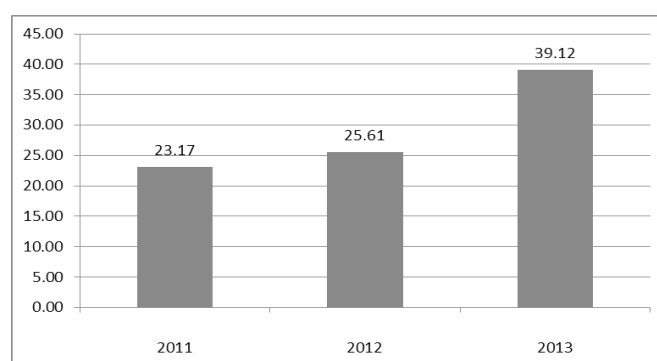
Graph 2 The efficiency coefficient on Croatian farms, 2011-2013



Source: FADN Standard Results 2011-2013

The trend in productivity on Croatian family farms is positive, showing a constant increase for the analysed period. In the period from 2011 to 2013 there was a 70% increase in productivity.

Graph 3 The trend in productivity on Croatian farms, 2011-2013, kn/hour



Source: FADN Standard Results 2011-2013

Regarding the number of farms observed for the given period, there is an increasing trend for the most of them, with exception of dairy, pig and mixed farms. In the years 2011 and 2012, 24% of farms are classified as mixed type, 20% of farms as dairy cattle and cattle, sheep and goat's type, while smallest share have vegetable and flower farms (only 1%). In the year 2013 the share of mixed farms fell to 21% and pigs and poultry farm from 7% to 1%. The highest increase was at crops farm (30%).

Usually the largest agricultural areas belong to a farms engaged in crop farming and cattle breeding, than sheep and goats breeding. The smallest utilized agricultural areas have farms with vegetable and flower production.

Rented land follows the trend of the total utilized agricultural area and largest are at a crop and cattle farms, sheep and goat farms (26 or 19 hectares), while the smallest are at vegetable and flower farms (an average of 2 ha).

Table 3 Total utilized agricultural area (ha/farm)

	Crops	Vegetable and flower	Permanent crops	Dairy cattle	Cattle, sheep, goats	Pigs and poultry	Mixed
2011	34.5	2.1	5.4	24.8	44.2	9.0	16.2
2012	32.3	2.0	7.2	25.2	25.6	9.6	12.4
2013	30.9	2.4	5.3	22.3	23.4	11.7	15.3
Average, ha	32.5	2.2	6.0	24.1	31.0	10.1	14.6

Source: FADN Standard Results 2011-2013

During the observed period the number of livestock units decreased in all farm types, with the exception of permanent crops and pigs and poultry type for the year 2012. Since the livestock unit presents the total number of animals for observed period, reduced to the weight of 500 kg, it has to be calculated from the number of animals, their weight and days at farm.

Table 4 Livestock units by farm type

	2011	2012	2013
Crops	4.58	3.89	2.98
Vegetable and flower			
Permanent crops	2.55	3.91	1.92
Dairy cattle	24.20	22.57	19.65
Cattle, sheep and goats	23.44	17.39	15.85
Pigs and poultry	56.86	57.39	49.42
Mixed	11.91	8.24	7.46

Source: FADN Standard Results 2011-2013

In the year 2011 the vegetable and floriculture farms operated with a largest gross farm income, while pigs and poultry farm have smallest gross farm income. Dairy farms generated smallest gross farm income in 2012 while vegetable and flower farm type earned the highest one. In the year 2013 vegetable and floriculture farms together with pig and poultry farms have largest gross farm income.

Table 5 Total output, inputs and gross farm income by farm types (in 1000 HRK)

	2011			2012			2013		
	Total output	Total inputs	Gross farm income	Total output	Total inputs	Gross farm income	Total output	Total inputs	Gross farm income
Crops	434.5	599.9	171.5	524.5	517.4	248.9	336.8	300.6	170.2
Vegetable and flower	1,237.5	500.1	1,045.9	921.4	376.2	811.1	579.4	561.1	210.3
Permanent crops	229.7	271.5	152.0	250.8	279.2	177.2	156.2	132.3	112.5
Dairy cattle	509.0	728.8	93.2	498.8	680.1	64.4	319.3	296.1	171.8
Cattle, sheep and goats	342.2	471.2	120.6	261.8	353.6	68.5	166.9	151.1	91.1
Pigs and poultry	716.6	1,038.1	15.1	728.6	851.8	151.3	774.3	790.0	201.1
Mixed	315.6	451.7	125.4	246.5	322.4	105.0	173.7	157.6	100.7

Source: FADN Standard Results 2011-2013

The largest level of debt has a vegetable and floriculture type of farms, which is expected since it is a capital intensive production. Cattle, sheep, goats and mixed types of farms are the least creditworthy burdened. For the year 2013 the coefficient can't be presented due to the lack of data.

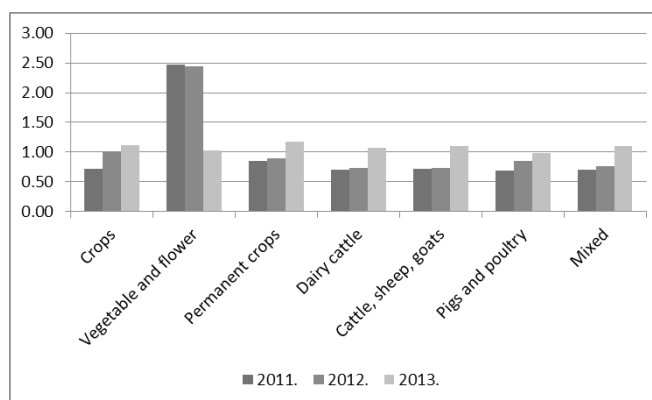
Table 6 Level of debt by farm types

Farm type	Year	
	2011	2012
Crops	31%	52%
Vegetable and flower	249%	70%
Permanent crops	30%	30%
Dairy cattle	23%	26%
Cattle, sheep and goats	15%	16%
Pigs and poultry	100%	23%
Mixed	21%	24%

Source: FADN Standard Results 2011-2013

Efficiency coefficient shows a trend of growth at all farming types for the analysed years, except for the vegetable and floriculture farms where the trend is declining. The most of farm types are efficient (coefficient more than 1) only at year 2013, with exceptions at crop farms (at efficiency level for the years 2012 and 2013) and vegetable and floriculture farms (above the efficiency level for all analysed years).

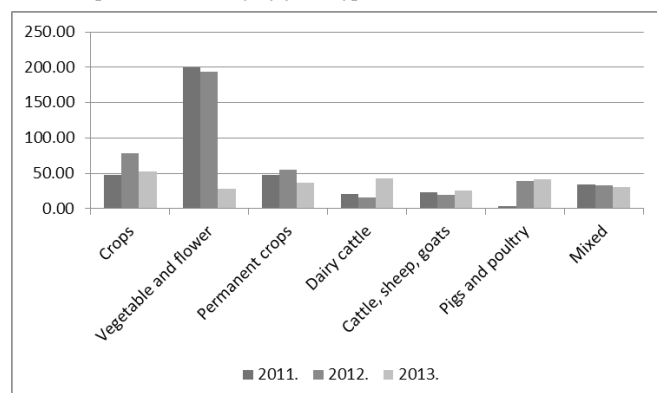
Graph 4 Efficiency coefficients by type of farms, 2011-2013



Source: FADN Standard Results 2011-2013

The highest productivity is observed at floriculture and vegetable type of farming for the years 2011 and 2012, with a sudden and very large drop registered in 2013. The average productivity ranges from 24 HRK/hour (for cattle, sheep and goats types of farming) to 140 HRK/hour at the vegetable and floriculture type of farming. When comparing these two opposite sides it means that cattle, sheep and goats types are at level of 17% of productivity at vegetable and floriculture type.

Graph 5 Productivity by farm types in HRK/hour, 2011-2013



Source: FADN Standard Results 2011-2013

The largest amount of total subsidies were recorded at crop farms (average 120.03 HRK) and dairy farms (average 109.96 HRK), while the lowest was recorded at vegetables and flowers (30.03 HRK). In the last observed year there were recorded smaller amounts of total subsidies in relation to the previous two observed years. The biggest fall in the amount of total subsidies is registered in permanent crops (average 78%), vegetable and flower (average 77%) and mixed (average 70%) farms.

Table 7 Total subsidies, excluding investment by farm types (HRK)

	2011	2012	2013	2013/2011	2013/2012
Crops	186,516.71	114,358.37	59,212.98	-68%	-48%
Vegetable and flower	30,419.16	50,777.88	8,894.48	-71%	-82%
Permanent crops	52,388.50	66,727.39	12,889.26	-75%	-81%
Dairy cattle	156,422.18	103,761.45	69,712.41	-55%	-33%
Cattle, sheep and goats	105,369.27	71,494.59	43,197.08	-59%	-40%
Pigs and poultry	109,797.59	58,918.80	27,281.07	-75%	-54%
Mixed	158,201.83	99,369.88	36,935.00	-77%	-63%

Source: FADN Standard Results 2011-2013

Table 8 Direct payments by farm types (HRK)

	2011	2012	2013	2013/2011	2013/2012
Crops	116,948.15	68,221.85	52,379.98	-55%	-23%
Vegetable and flower	13,534.10	7,328.99	8,780.07	-35%	20%
Permanent crops	19,362.51	13,944.19	10,087.52	-48%	-28%
Dairy cattle	82,825.89	55,255.65	58,650.35	-29%	6%
Cattle, sheep and goats	62,626.04	37,616.79	28,677.48	-54%	-24%
Pigs and poultry	109,911.17	28,210.40	17,996.89	-84%	-36%
Mixed	37,818.95	27,357.44	32,176.19	-15%	18%

Source: FADN Standard Results 2011-2013

The largest amount of direct payments were recorded at crop farms (average 79.18 HRK) and dairy farms (average 65.58 HRK), while the lowest was recorded at vegetables and flowers (9.88 HRK). The largest fall in the amount of direct payments is registered at pigs and poultry farm (average 60%), cattle, sheep and goats farm (average 39%) and crops farm (average 39%). This decrease in direct payments is smaller than decrease in total subsidies.

Conclusion

Regarding the number of farms observed for 3-year period (2011-2013), there is an increasing trend for the most of them, with exception of dairy, pig and mixed farms. More than 50% of observed Croatian farms have less than 2 ha of arable land. The total utilized agricultural area per farm (UAA) from 2011 to 2013 was decreasing from 20.78 to 19.63 ha per farm. In average, the largest areas have crop farms (32.5 ha), cattle, sheep and goats farms (31 ha), while the smallest areas are registered at vegetable and floriculture farms (2.2 ha).

As for the land, the declining trend is also registered for the livestock units (LU) – for the year 2013 LU was 44% lower than for the year 2011. This downward trend is transferred to the farms total revenue and costs, so farms were below the efficiency level for the years 2011 and 2012 and starts to recover in the year 2013. The efficiency coefficient shows a positive trend at almost all farming types, while the biggest drop was at vegetable and floriculture farms.

The efficiency and productivity trends are positive, and the only indicators that show constant growth for the 3-year period. The most of farm types are efficient (coefficient more than 1) only in the year 2013, while vegetable and flower farms are efficient in all three observed years. The average productivity ranges from 24 HRK/hour (cattle, sheep and goats rearing) up to 140 HRK/hour (vegetable and floriculture farms).

In average, the vegetable and floriculture farms have the largest gross farm income in all three analysed years (average 689.1 HRK), but with a large drop in 2013, while the farms in type pigs and poultry have largest increase of gross farm income in 2013.

The highest level of debt is registered at vegetable and floriculture farms due to their capital intensiveness, while the lowest is at cattle, sheep and goats farms.

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CHARACTERISTICS OF VALUE BASED ORGANIC FOOD CHAINS: TWO CASES FROM SLOVENIA

Jernej Prišenk^{1*} – Andreja Borec¹

¹University of Maribor, Faculty of Agriculture and Life Sciences, Pivola 10, 2311 Hoče, Slovenia

*Correspondence to: jernej.prisenk@um.si

Abstract: In the literature the value based food chains express two main characteristics: business relationships among strategic partners interacting in the supply chain are based on a written set of values and food products are differentiated from similar food products (Stevenson, 2009). To verify the first part of the definition the analysis of two organic food chains were carried out. For the analysis of business relationships and food quality communication in the food chain two different methodological approaches were used. For collecting the input data semi-structured interviews of various stakeholders were performed. The results of the analyzed case studies show the characteristics of value based food chains could be broader and more complex if some additional perspectives were considered.

Keywords: value based food chain, organic production

Acknowledgment: the analyzed case studies are part of the cross national analysis of mid-scale value based food chains in the frame of EU Core organic II project Healthygrowth: From niche to volume with integrity and trust (2013-2015).

1. Introduction

The commonly use of value based food chain terminology can be found in the recent European scientific literature after 2010 (Stevenson and Pirog 2008, Pirog and Bregendahl 2012, European Parliament 2013). Vacas et al. (2014) have explained positive direct and indirect economic and social effects of value based food chain to increasing the local economy and community, such as higher farmer's income, lower unemployment rate, "fair price", and good relationships between the actors. Vacas et al. (2014) also argue positive direct and indirect economic effects of value-based food chains are definitely lower compare to conventional food chains, because of higher production costs and investments in production and processing system.

The characteristics of VBFC are: i) producing and spread the values equably to all partners, addressing producers, processors, retailers and consumers demand for memorable (according to Stevenson et al. 2011; Viitaharju et al. 2005) and ii) producing food products which are differentiated from similar food products based on product attributes such as food quality and safety. VBFC depends on an excellent cooperation and information flow between chain members during growth, aiming to provide transparency (Münchhausen et al. 2014). Growth process and successful development of VBFC are also closely linked to trust between the actors along the food chain (including the consumers trust into the food chain or brand), which can be reached with developing interactions between producers and consumers.

The objective of this paper is to analyze the stakeholder networking and relationships for two value-based ecological food chain cases from Slovenia with two different methodological approaches: i) constellation analysis and ii) down-stream and up-stream communication schemes.

2. Material and Methods

2.1 Value-based food chains – Slovenian case studies

The main difference between VBFC and other forms of food chains is in expression of the (added) value ("Value" and/or "Value added") which could be expressed through three different ways (Stevenson and Pirog 2008; Pirog and Bregendahl 2012; European Parliament 2013):

1) Through the agro-food products made from raw materials showing the origin of the food and consequently reaching a higher price on the market; 2) through the protected designations labels that express geographic location, higher quality and/or food safety and 3) as a combination of correct business relationships and interactions between different actors in the food chain.

Stevenson and Pirog (2008), Pirog and Bregendahl (2012), Stevenson et al. (2011) and Stevenson (2013) explained the definition of food chain with added value according food chain actors relationships. These differences are:

1) business relationships between strategic partners in the VBFC are built on common principles, which primary

Table 1: Statistical characteristics of case studies

DESCRIPTION OF CASE STUDIES IN NUMBERS (year 2013 and 2012*)					
NAME OF CASE STUDY	NUMBER OF FARMS	NUMBER OF EMPLOYEES	TURNOVER* (€)	NUMBER OF DISTRIBUTION CHANNELS	PRODUCT RANGE
PLANIKA	120	52 (direct in Planika dairy)	8.747.356*	67	6.142.253,6 kg and lit of milk products
EKODAR	80	150 (indirect in central services)	64.465	53	15.809 kg of eco beef

base and are built through the trust component. The strategic partners contribute a large share to well organization and functionality of the chain. Strategic partners are commonly the companies or processors; 2) the producers/farmers are treated the same as the strategic partners in discussion about risk management and decision-making; 3) obligations and rights in the chain are placed for improving the benefits of all actors and 4) coordination of the actors is coordinated at the local, regional, national and/or international level.

Two case studies of value based food chains from Slovenia (statistical data are presented in Table 1) were analyzed, both with eco products. Both are medium scale food chains, one with milk production and the second with beef meat production. Both are located in Alpine and pre-alpine region. Planika dairy as first case and Agricultural Cooperative Šaleška Valley (Ekodar) as second case are the key actors in analyzed food chains. Both have a major role in processing the stage.

2.2 Constellation analysis and down-stream and up-stream communication schemes

Constellation analysis focuses on analyzing and mapping the relations between elements (actors) in food chain. Nöllting et al. (2009) describe the development process of constellation analysis in two steps. In first step is “mapping” and in the second step the functional principles and characteristics of the constellation are analyzed and interpreted. During the mapping process, researchers commonly use different symbols for different actors, such as technical artefacts, sign systems and natural elements. After that, directed relations, incompatible relations, conflicting relations and feedback relations between these elements follow. We used different symbols for the expression different types of communication, such as telephone, personal, email and written contractual communication..

Hence, for studying how the different actors along the chain communicate to their upstream and downstream partner and how the information flow between producers and consumers in both directions down-stream and up-stream, communication schemes have been used. With this methodological approach the type, frequency and content of communication for each actor with others along the supply chain can be identified.

Communication schemes between the actors represent the direction of communication. For example, if the initiative for communication with the consumer comes from the producers side it is called down-stream communication (this type of communication is marked with orange squares). If

the initiative for communication with the consumers comes from the consumers side it is called up-stream communication (this type of communication is marked with green squares). With constellation analysis we gain the information mostly about the type of communication (written, personal, social networks, etc.) and relationships between actors in the chain while with up and down-stream communication schemes the frequencies and content of communication - values (ensuring the quality of food products, animal welfare, environmental concerns, “fair price”, etc...) can be found out.

2.3 Input data

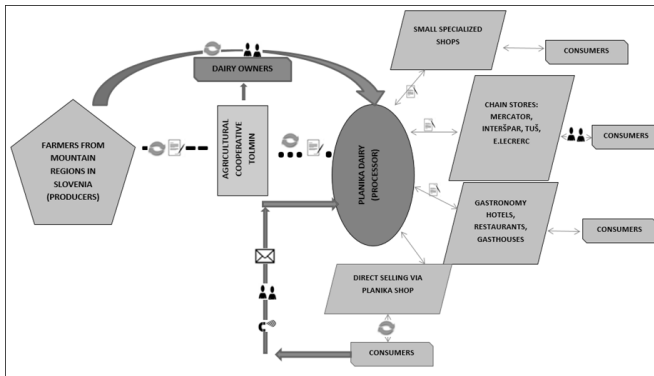
The input data for both methodology approaches to gain business relationships and information of food quality communication was obtained with a questionnaire completed by 24 farms from the mountain areas as well with interviews of actors in different stages of food chains. The question types were open and closed. Interviews were carried out between June and October 2014 and performed by qualified interviewers. The main aim of the questionnaire and interviews were ensuring precise information about formation of food chain in the past, present status and future development plans.

3. Results and Discussion

3.1 Explanation of constellation analysis

Figure 1 presents the Constellation analysis schemes of Planika value-based food chain. Planika dairy is a key actor (strategic partner) in the chain and it is important in transformation of the news, experiences and opinions between the actors from the beginning to the end of the food chain. The specific characteristics of Planika case study is in the management decision-making processes, where second level actor Agricultural Cooperative Tolmin is involved. This specific characteristic cannot be found in the Ekodar case study (Figure 2). In Planika, this type of decision making is comprehensible, because the Agricultural Cooperative Tolmin is the owner of Planika dairy. The meaning of symbols used in constellation analysis are presented in Table 2 for Planika case study and in Table 3 for Ekodar case study.

Figure 1: Constellation analysis scheme of Planika value-based food chain



The owner of Ekodar brand is Agricultural Cooperative Šaleška Valley. Compared to the Planika case study, the Ekodar food chain is structured only from primary actors. Both value-based food chains have identity structure, while in the Ekodar brand management decision-making goes to Agricultural Cooperative Šaleška Valley. Another special feature is the QR code (Quick Response code), which enables communication and exchange of information between consumers and producers in the Ekodar food chain. Consumers can scan the QR code with smart phones from the packaging and get information about the farm.

Table 2: Symbols for relationships between actors and different types of communication in the case of Planika value-based food chain

SYMBOLS	DESCRIPTION OF SYMBOLS
	Relationships between consumers - retailers, and retailers - Planika dairy
	Relationships between producers and Planika dairy
	Relationships between producers and Agricultural Cooperative Tolmin
	Relationships between Agricultural Cooperative Tolmin and Planika dairy
	Frequent exchange of experiences
	Relationships between consumers and Planika dairy
	Written agreements
	Personal communication
	Telephone communication
	E-mail communication

Figure 2: Constellation analysis scheme of Ekodar value-based food chain

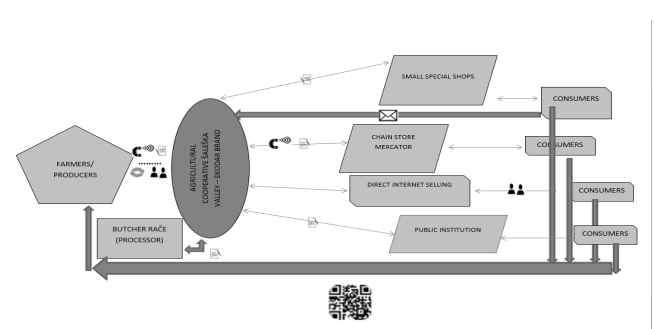


Table 3: Symbols for relationships between actors and different types of communication in the case of Ekodar value-based food chain

SYMBOLS	DESCRIPTION OF SYMBOLS
	Relationships between consumers - retailers, and retailers - Agricultural Cooperative Šaleška Valley
	Relationships between producers and Agricultural Cooperative Šaleška Valley
	Relationships between Agricultural cooperative and Slaughter house in Rače
	Frequent exchange of experiences
	Relationships between consumers and Agricultural Cooperative Šaleška Valley
	Written agreements
	Personal communication
	Telephone communication
	E-mail communication
	Relationships between consumers and producers via Quick response code
	Quick response code (QR code)

3.2 Explanation of down-stream and up-stream communication schemes

The results of the communication schemes (Figures 3 and 4) identify well-organized communication between all actors in the chain in both ways. Each actor in the chain interacts (communicate) with the actors before and after them. The difference in case studies can be observed in the communication between consumers and producers. Communication is constantly present via QR codes in the case of Ekodar value-based food chain, while the regular communication in Planika chain does not exist. Communication schemes also have a disadvantage; they do not represent internal communication among the groups of a single actor, such as communication among producers. Based on the findings from the fieldwork we identify this type of communication in the case of Planika case study,

where farmers communicate with each other via Agricultural Cooperative Tolmin.

Figure 3: Up-stream and down-stream communication scheme of Planika value-based food chain

	Producers	Agricultural cooperative Tolmin	Planika dairy	Retailers	Consumers
Producers		Daily e-mail communication, personal communication, contractual agreements about quality and purchased quantities of milk	Occasional personal communication and contractual agreements about purchased quantities and quality of milk	No communication	No communication
Agricultural cooperative Tolmin	Daily e-mail communication, personal communication, contractual agreements about quality and purchased quantities of milk		E-mail communication (few times per week), phone communication, contractual agreements (agreements about purchased milk - yearly quantities)	No communication	No communication
Planika dairy	Occasional personal communication and contractual agreements about purchased quantities and quality of milk	E-mail communication (few times per week), phone communication, contractual agreements (agreements about purchased milk - yearly quantities)		E-mail communication (few times per year) and monthly personal communication about quality problems, prices and stocks	Organization of social events with consumers. Promotion of dairy products in different fairs
Retailers	No communication	No communication	E-mail communication (few times per year) and monthly personal communication about quality problems, prices and stocks		Promotion of dairy products in chain stores and fairs
Consumers	No communication	No communication	E-mail communication about quality of dairy products	Occasional e-mail communication about quality questions	

For chain growth, the communication about quality assurance of food products has a huge importance. Daily communication between processors and producers about the quality of raw materials exists in both cases via e-mail and personal conversations, while the communication between processors and consumers takes place from time to time (about ten times per month) via e-mail. However, there exists one way communication about quality of food products between consumers and key actors (processors in these case studies) with using different quality designations (organic products, protected designation of origin, protected geographical identification). A special way of communication about the origin of organic beef occurs in the Ekodar value-based food chain, where a QR code is used for direct and objective communication between consumers and producers. Daily personal and weekly communication about beef quality via e-mail exists between slaughterhouse and Agricultural Cooperative Šaleška Valley.

Figure 4: Up-stream and down-stream communication schemes of Ekodar value-based food chain

	Producers	Butcher Rače (processor)	Agricultural cooperative Šaleška Valley	Retailers	Consumers
Producers		No communication	Personal communication and contractual agreements about the number of animals purchased	No communication	No communication
Butcher Rače (processor)	No communication		E-mail communication (few times per week), phone communication, contractual agreements. All communication about quantity of slaughtered animals	No communication	No communication
Agricultural cooperative Šaleška Valley	Personal communication and contractual agreements about the number of animals purchased	E-mail communication (few times per week) in the case of agro-food products quality problems		E-mail communication few times per year and personal communication about quality problems, prices and stocks	E-mail communication about consumers satisfaction
Retailers	No communication	No communication	Occasional e-mail communication about the margins		Promotion of agro-food products in chain stores and

4. Conclusion

Analysis of interactions between the actors inside the value-based food chain have shown a well-developed communication about the quality of food and raw materials with different modes of communication (personal communication, phone calls, e-mail communications and contractual agreements). Actors intensively communicate with each other and with the actors before and after them, while weakness could be defined in communication about values along the entire chain and in communication between consumers and producers in both cases. We can confirm the presence of one important characteristic of value based food chains in the analyzed case studies - the business relationships among the actors in supply chain are present and fair, while the communication about the values such as “fair price”, animal welfare, reduction of pesticides use and environmental friendly farming are not emphasized or are completely lost along the chain. For further “healthy” growth of value based food chains and their positive impact on local/regional areas additional economic indicators, such as employment, economy and life standard growth should be studied.

5. Literature

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PLANT PRODUCTION FOR BIOMASS INTO ENERGY: ECONOMICS AND ENERGY EFFICIENCY VIEW

Karol Wajszczuk* – Jacek Wawrzynowicz* – Benedykt Pepliński*

*Poznan University of Life Sciences, Department of Management and Law,
Wojska Polskiego 28, 60-637 Poznan, Poland, wajszczuk@up.poznan.pl

Abstract: The aim of the paper was to determine the influence of the fertilization level on the energy and economics efficiency of the production technologies of selected crops processed into bioethanol or biogas. There were investigated the following crops: rye, triticale, wheat, sugar beets, maize, sorghum, reed canarygrass and Virginia fanpetals. In the energetic efficiency the Energy Return on Energy Investment index (EroEI) was used. Apart from the ERoEI ratio, the Net Energy Value (NEV) ratio was also used. In the economics efficiency attitude, the Gross Margin (GM) was determined. The investigations proved that in general, the production technologies of crops where the lowest levels of nitrogen fertilization were applied proved to have the highest energetic efficiency. The highest economic efficiency was characterized by the production of corn for biogas. In the case of the production of bioethanol (all plants), ratios were on the verge of profitability or the lack of it showed. The analysis proved that the efficiency of the technologies of production of the crops to be processed into biogas is several times higher than the energetic efficiency of the technologies of production of the crops to be processed into bioethanol.

Keywords: biomass, energy consumption, bioethanol, biogas, economics efficiency, energy efficiency

Introduction

At the time of the energy crisis there are a number of studies on the use of biomass for energetic purposes conducted around the world (Biofuels in EU 2006; Biofuels Progress Report 2006; EEA Briefing 2005). Therefore, it is necessary to conduct research aimed at the evaluation of the energetic and economic efficiency of the technologies related with the production of biomass for energetic purposes (Faaij 2006; Roszkowski 2008).

This issue was undertaken as part of the research project “The Development of a Species Index and Optimization of Production Technologies for Selected Energy Crops”. It is a five-year research project numbered POIG.01.03.01-00-132/08-00, financed by the European Regional Development Fund as part of the Operational Programme ‘Innovative Economy’. The project is implemented in the years 2009-2015.

Many tasks are carried out in the project. Some of them are the analysis of the energy and economics efficiency of the proposed technologies of production of selected crops for energetic purposes.

According to the current prices, the production of presently best-known liquid fuels such as bioethanol or rape oil esters is about twice as expensive as the costs of production of mineral fuels (Dobek et al. 2010). Although at present the costs of production of biofuels are high, there are a lot of advantages resulting from the processing of biomass into energy. Some of them are:

- limited emission of toxic compounds,
- reduced greenhouse effect,
- biodegradability.

Apart from cost accounting energy efficiency costing is an important element in the assessment of production of biofuels. The advantage of energy costing is its independence of price relations, which enables a comparison of findings in different research centres. Therefore, one of the tasks in the project is to make ‘An Analysis of the Energy Efficiency of the Proposed Technologies of Production of Selected Crops Grown for Energetic Purposes’.

Aim and scope of the research

A wide range of factors which may influence the effectiveness of production of plants for energetic purposes was analysed in the project. These factors include:

- cultivar traits,
- the degree of nitrogen fertilisation,
- soil type,
- regionalisation of crops,
- applied production technologies and others.

One of the partial aims of the research was to determine the influence of the degree of fertilisation on the energy and economics efficiency of the technologies of production of selected crops processed into biofuels or biogas. These issues are presented in this paper. The advantage of energy costing is its independence of price relations, which enables a comparison of findings in different research centres.

Methods

The project involved experimental field investigations on selected cereal cultivars, sugar beets, maize, sorghum and Virginia fanpetals in order to develop optimal (model) technologies to produce high quality raw material for the production of liquid and gas energy.

The assessment of the energy and economics efficiency of the technologies of production of selected plants processed into bioethanol will show the results concerning sugar beets, maize, triticale and rye the other hand, into biogas – maize, sorghum and Virginia fanpetals. Depending on the plant investigated and allowing for fertilisation requirements the following levels of nitrogen fertilisation were assumed in the research: for cereals and Virginia fanpetals : 40 N, 80 N and 120 N, for maize, sugar beets and sorghum: 80 N, 120 N and 160 N.

As far as maize is concerned, it will enable an additional comparative analysis with a division into diversified use of the plant – for bioethanol or biogas.

As far as biomass is concerned, indexing methods with numerical ratios between outlay made and effects achieved in the entire or partial manufacturing cycle will be used in the comparisons and assessments of energetic usefulness. In order to assess products with the characteristics of energy carriers or fuels, including various forms of biomass, the Energy Return on Energy Investment index (ERoEI), also known as the Energy Return on Investment (ERoI), will be used and calculated according to the following formula (1) (Wójcicki 2005):

$$ERoEI (ERoI) = E_{out} / E_{in} \quad (1)$$

where:

- E_{out} - energy gained (useful)
- E_{in} - energy intake, energy input

Apart from the ERoEI ratio, the Net Energy Value (NEV) ratio is also used in the assessment of the energetic efficiency of the product. The ratio is defined as the difference between the amount of energy gained (E_{out}) and the amount of energy consumed to make the product (E_{in}).

The methodology of assessment of the energy gained (E_{out}).

As far as biogas is concerned, its calorific value depends on the content of methane (CH_4), whose calorific value is 39.7 MJ/m³ (Oleszkiewicz 1999). In the laboratory investigations we determined the content of methane in the biogas produced as a result of fermentation of silages. The silages were made from maize grown at the three aforementioned levels of nitrogen fertilisation. Then the result per 1 ha of the plantation was calculated.

As far as bioethanol is concerned, in the laboratory investigations the ethanol yield ratios were calculated – the number of litres gained from 100 kg of raw material. The calorific value of ethanol was assumed to be 21.5 MJ/l (Górski

et al. 2008). Having taken the yield volume into consideration, the result per 1 ha of the plantation was calculated.

The methodology of assessment of the energy intake (E_{in}).

In order to assess the energy intake in the production of biofuel we used the computational method developed at the Institute for Building, Mechanisation and Electrification in Agriculture (IBMER) (Anuszewski 1987) and by Mokrzycki (2005) and Richards (2000). In general, two components of the outlay can be listed. The first concerns the outlay related to the production of the raw material (E_{inp}), whereas the other one concerns the outlay related to the raw material processing (E_{int}). Thus, the general formula for determination of the energy input into the production of biofuel looks as follows (2):

$$E_{in} = \Sigma E_{inp} + \Sigma E_{int} \quad (2)$$

where:

- E_{in} - as in formula (1),
- ΣE_{inp} - total input of energy for the production of plant raw material,
- ΣE_{int} - total input energy for the processing of plant raw material into biofuel.

Due to the substantive scope of the project, as far as the energy intake is concerned, this paper will assess the first element related to the production of raw material and supplying it to the place where it will be processed into biofuel.

The total energy related to the production of plant raw material is composed of four basic streams of energy. It is calculated according to the following formula (3):

$$\Sigma E_{inp} = \Sigma E_{mat} + \Sigma E_{agr} + \Sigma E_{pal} + \Sigma E_r \quad (3)$$

where:

- E_{inp} - as in formula (2) [MJ·ha⁻¹];
 - ΣE_{mat} - total energy input from the applied materials* and raw materials [MJ·ha⁻¹];
 - ΣE_{agr} - total energy input from mechanized working operations [MJ·ha⁻¹];
 - ΣE_{pal} - total energy input from the fuel consumed in working operations [MJ·ha⁻¹];
 - ΣE_r - total energy input from human labour [MJ·ha⁻¹].
- *seeds, fertilizers, pesticides, etc.

In the economics efficiency attitude, the gross margin was determined as follows:

$$GM_{np} = R_{np} - DC_{np} \quad (4)$$

where:

- GM_{np} - Gross Margin of n-plant
- R_{np} - Revenue of n-plant
- DC_{np} - Direct Costs of n-plant

Table 1. The biogas efficiency from the production of maize, sorghum and Virginia fanpetals for silage at different levels of nitrogen fertilisation.

Nitrogen fertilisation level	Yield fresh weight [t/ha]	Biogas [m ³ /t f.w.]	Biogas [m ³ /ha]	CH ₄ content [%]	CH ₄ amount [m ³ /ha]	Energy gained E _{out} [MJ/ha]
Maize 80N	43.83	315.33	13821.06	62.00	8569.06	340191.53
Maize 120N	47.23	304.00	14357.92	58.00	8327.59	330605.47
Maize 160N	51.50	204.00	10506.00	54.00	5673.24	225227.63
Sorghum 80N	58.18	175.15	10190.00	60.00	6114.00	242725.80
Sorghum 120N	68.20	163.11	11124.00	58.00	6451.92	256141.22
Sorghum 160N	71.80	170.79	12263.00	57.00	6989.91	277499.43
Virginia fanpetals 40N*	34.23	337.15	11540.64	54.00	6231.95	247408.34
Virginia fanpetals 80N*	37.65	323.19	12168.10	40.00	4867.24	193229.48
Virginia fanpetals 120N*	41.42	246.05	10191.39	34.00	3465.07	137563.40

*I+II swath of Virginia fanpetals
Source: Authors' calculations.

Findings

As a result of the investigations the volume of energy gained (E_{out}) from individual plants was assessed.

Table 1 shows the results referring to maize, sorghum and Virginia fanpetals silage for biogas. The table presents the yield obtained, the amount of biogas gained, including the content of methane and the energetic efficiency per 1 ha, depending on the three levels of nitrogen fertilisation.

The highest biogas efficiency per ha was gained from the medium level of fertilisation, i.e. 120 N from the production of maize 14357.92 m³/ha. On the other hand, as far as the methane gain is concerned, which results in the amount of energy gained, the highest efficiency was obtained at the lowest level of nitrogen fertilisation, i.e. 80N – 340191.53 MJ/ha. The

same relation was in the case of production of Virginia fanpetals. Quite different results were in the case of sorghum production. Both the highest biogas efficiency per ha and the highest amount of energy gained per ha were gained from the highest level of fertilisation, i.e. 160 N.

Table 2 shows the results for the plants grown for bioethanol. The results include: the yield gained, ethanol efficiency per weight unit of the raw material and per farmland area unit, and the energetic efficiency per 1 ha, depending on the three levels of nitrogen fertilisation.

As results from the data presented in Table 2, the highest amount of energy can be gained from the production of sugar beets, where the fertilisation level is 160 N. It is four times more than the amount gained from cereal production and it is two times more than the amount of energy gained from maize production.

Table 2. The efficiency of bioethanol produced from the selected plants at different levels of nitrogen fertilisation.

Plant/Nitrogen fertilisation level	Yield		Ethanol efficiency		Energy gained E _{out}
	t/ha	dt/ha	l/dt	l/ha	MJ/ha
rye / 40N	4.21	42.10	31.80	1338.78	28783.77
rye / 80N	4.63	46.30	31.60	1463.08	31456.22
rye / 120N	4.52	45.20	31.80	1437.36	30903.24
triticale / 40N	4.55	45.50	31.80	1446.90	31108.35
triticale / 80N	4.78	47.80	33.40	1596.52	34325.18
triticale / 120N	5.06	50.60	34.80	1760.88	37858.92
maize / 80N	8.15	81.50	33.00	2689.50	57824.25
maize / 120N	9.02	90.20	27.20	2453.44	52748.96
maize / 160N	9.23	92.30	32.20	2972.06	63899.29
sugar beets / 80 N	45.80	458.00	9.47	4335.73	93218.27
sugar beets / 120 N	56.76	567.60	10.00	5676.00	122034.00
sugar beets / 160 N	59.89	598.90	9.73	5829.29	125329.81

Source: Authors' calculations.

Table 3. Energy input from the production of maize, sorghum and Virginia fanpetals silage for biogas at different levels of nitrogen fertilisation.

Plant/Nitrogen fertilisation level	E_{mat}		E_{agr} MJ / ha	E_{pal} MJ / ha	E_r MJ / ha	E_{inp} MJ / ha
	fertilisers MJ / ha	others MJ / ha				
Biogas:						
Maize 80N	8242.00	1380.00	2962.73	24451.00	1233.67	38269.40
Maize 120N	11322.00	1380.00	3115.66	26912.74	1346.56	44076.96
Maize 160N	14402.00	1380.00	3238.11	28704.69	1452.73	49177.53
Sorghum 80N	8242.00	1120.00	2343.54	10479.00	504.00	22688.54
Sorghum 120N	11322.00	1120.00	2545.52	11285.00	546.00	26818.52
Sorghum 160N	14402.00	1120.00	2783.12	11975.00	588.00	30868.12
Virginia fanpetals 40N*	5054.00	1290.00	2980.66	12662.12	695.10	22681.88
Virginia fanpetals 80N*	8380.00	1290.00	3156.80	14437.50	777.00	28041.30
Virginia fanpetals 120N*	11690.00	1290.00	3275.90	15750.00	823.20	32829.10

*I+II swath of Virginia fanpetals

Source: Authors' calculations.

As far as the levels of fertilisation are concerned, for sugar beets the difference in the energy efficiency between the highest and the lowest level of nitrogen fertilisation is 33.5%, but the difference between the highest and the medium level is only 2.9%.

As far as maize is concerned, the lowest energy efficiency was gained from the medium level of fertilisation (120 N) and it was lower than the lowest nitrogen level and the highest nitrogen level by 15.1% and 21.8%, respectively.

As far as cereals are concerned, the lowest fluctuations in the energetic efficiency could be observed in rye. The difference between the highest efficiency (80 N) and the lowest efficiency (40 N) was 8.6%. As far as triticale is concerned, the difference reached 23.2%, but the highest energy efficiency was gained from the highest level of fertilisation (120 N).

It is also interesting to see the comparison of the energy gained from maize depending on the farming technology – grain or silage. This comparison definitely points to the advantage of the silage technology, where about six times more energy was gained than from the for grain technology.

The energy intake (E_{in}) is the other aspect of the energy balance. As was earlier shown in the methodology, this publication will present the amount of accumulated energy related with the raw material production and transport to the place of processing (E_{inp}). Tables 3 and 4 show the results of investigations into this matter. The volumes of four basic streams of energy were calculated for each of the plants under investigation, allowing for the level of nitrogen fertilisation. In view of the fact that the level of nitrogen fertilisation was the chief factor differentiating the technologies for a particular

Table 4. Energy input from the production of seeds of selected plants for bioethanol at different levels of nitrogen fertilisation.

Plant/Nitrogen fertilisation level	E_{mat}		E_{agr} MJ / ha	E_{pal} MJ / ha	E_r MJ / ha	E_{inp} MJ / ha
	fertilisers MJ / ha	others MJ / ha				
Bioethanol:						
maize / 80 N	8132.00	1220.00	2714.41	18235.35	765.20	31066.96
maize / 120 N	11296.00	1220.00	2680.12	19720.81	799.90	35716.83
maize / 160 N	14367.00	1220.00	2760.35	21318.49	830.51	40496.35
rye / 40 N	5054.00	2302.00	2442.24	8058.89	640.85	18497.98
rye / 80 N	8380.00	2659.00	2502.61	8622.27	638.02	22801.90
rye / 120 N	11690.00	2928.00	2522.68	8802.41	658.43	26601.52
triticale / 40 N	5054.00	2663.00	2492.30	8460.01	692.54	19361.85
triticale / 80 N	8380.00	3024.00	2558.53	9039.20	676.11	23677.84
triticale / 120 N	11690.00	3401.00	2436.35	9083.90	686.90	27298.15
sugar beets / 80 N	8132.00	890.00	6924.03	26877.45	1837.10	44660.58
sugar beets / 120 N	11366.00	1010.00	7036.27	29314.08	2001.46	50727.81
sugar beets / 160 N	14967.00	892.00	7203.56	31005.92	2133.19	56201.67

Source: Authors' calculations.

Table 5. The energy efficiency of selected plants produced for biogas depending on the level of nitrogen fertilisation.

Plant/Nitrogen fertilisation level	E_{out} MJ / ha	E_{inp} MJ / ha	ERoEI	NEV MJ / ha
Biogas:				
Maize 80N	340191.53	38269.40	8.89	301922.13
Maize 120N	330605.47	44076.96	7.50	286528.51
Maize 160N	225227.63	49177.53	4.58	176050.10
Sorghum 80N	242725.80	22688.54	10.70	220037.26
Sorghum 120N	256141.22	26818.52	9.55	229322.70
Sorghum 160N	277499.43	30868.12	8.99	246631.31
Virginia fanpetals 40N*	247408.34	22681.88	10.91	224726.46
Virginia fanpetals 80N*	193229.48	28041.30	6.89	165188.18
Virginia fanpetals 120N*	137563.40	32829.10	4.19	104734.30

*I+II swath of Virginia fanpetals
Source: Authors' calculations.

plant, the stream of energy related with fertilisation was enhanced in the stream of accumulated energy related with materials and raw materials.

Upon the analysis of the data presented in Table 3 it is noticeable that the technologies with the highest level of nitrogen fertilisation (160 N) are characterised by the highest energy consumption – nearly 50 GJ/ha in case of maize, around 31 GJ/ha in case of sorghum and around 33 GJ/ha in case of Virginia fanpetals (120N) . In the case of maize this energy consumption is 28.5% higher than in the technology with the fertilisation level 80 N and it is 13.4% higher than in the technology with the fertilisation level 120 N. In the structure of energy streams the highest consumption is related with the stream of fuel consumed (E_{pal}) and it makes between 58% and 64% of the total energy consumption. The works related with the preparation and transport of silage were the dominant outlay in this stream. The same trend is also confirmed by a Pepliński study (2014).

Generally, the same relation is observed also in two other plants. But in comparison with maize, both in sorghum and Virginia fanpetals, total energy input from the fuel consumed and total energy input from the human labour are lower around 50% than in case of maize.

The data presented in Table 4 concern the energy input from technology of production of selected plants for bioethanol. As results from the analysis of the data, the technologies of production of sugar beets are the most energy-consuming: 44.6 GJ/ha for the level of 80 N, up to 56.2 GJ/ha for the level of 160 N. The difference between the highest and lowest level of energy consumption is 25%. The dominant energy stream is the stream of fuel consumed (E_{pal}), which ranges from 55% to 60% of total energy consumption. The works related with the harvesting and transport of raw materials were the dominant outlay in this stream. Apart from that, in comparison with the other plants, the technologies of production of sugar beets were found to involve about three times higher outlay

related with the energy consumption of the machines and tools applied and with the amount of human labour.

As far as cereals are concerned – rye and triticale – the energy consumption ratios are at similar levels. However, depending on the levels of nitrogen fertilisation, it is possible to observe bigger differences in energy consumption between the technologies than in the case of sugar beets or maize. The difference in energy consumption between the technology with the lowest level of nitrogen fertilisation and the technology with the highest level of nitrogen fertilisation ranges from 41% (triticale) to 43% (rye). The differentiating factor was the level of nitrogen fertilisation.

The analysis of the production of maize for bioethanol reveals that dependences in the structure of energy streams are similar to those in the technologies of cereal production, but there is not such a considerable difference in the total energy consumption. The difference in energy consumption between the technology with the lowest level of nitrogen fertilisation and the technology with the highest level of nitrogen fertilisation is 28.5%. The energy consumption of the technology with maize produced for bioethanol is about 10-15 GJ/ha lower than in the technology of production of sugar beets.

The aim of the final stage of the research was to determine the energy efficiency of the technologies of production of crops for biofuels, depending on the level of nitrogen fertilisation. As results from the data shown in Tables 5 and 6, the highest ERoEI (Energy Return on Energy Investment) ratio could be observed in the technologies of plants produced for biogas. The ratio ranges from 4.19, in the production of Virginia fanpetals where the level of nitrogen fertilisation is 120 N, up to 10.91 – the highest efficiency, which is achieved at the lowest level of nitrogen fertilisation, i.e. 40 N. The similar ratio, at the lowest level, is observed in the case of sorghum. Relatively, the lowest ratio was observed in the case of production of maize (from 4.58 up to 8.89) but these technologies were characterised by the highest NEV (Net Energy Value) ratio,

i.e. from 176.1 GJ/ha up to 301.9 GJ/ha and it was around 20% higher than in other plants.

As results from the comparative analysis of the technologies of production of the crops to be processed into bioethanol (tab.6), the energetic efficiency of these technologies is several times lower than the efficiency of the technologies of processing the crops into biogas. The ERoEI ratio ranged from 1.16 (the rye technology/120 N) to 2.41 (the sugar beets technology/120 N). The technologies with the lowest levels of nitrogen fertilisation proved to be the most energetically efficient. The technology of production of sugar beets was an exception. In this case the highest efficiency was obtained at the medium level of nitrogen fertilisation, i.e. 120 N.

Table 6. The energy efficiency of selected plants produced for bioethanol depending on the level of nitrogen fertilisation.

Plant/Nitrogen fertilisation level	E_{out}	E_{inp}	ERoEI	NEV
	MJ / ha	MJ / ha		MJ / ha
Bioethanol:				
maize / 80 N	57824.25	31066.96	1.86	26757.29
maize / 120 N	52748.96	35716.83	1.48	17032.13
maize / 160 N	63899.29	40496.35	1.58	23402.94
rye / 40 N	28783.77	18497.98	1.56	10285.79
rye / 80 N	31456.22	22801.90	1.38	8654.32
rye / 120 N	30903.24	26601.52	1.16	4301.72
triticale / 40 N	31108.35	19361.85	1.61	11746.50
triticale / 80 N	34325.18	23677.84	1.45	10647.34
triticale / 120 N	37858.92	27298.15	1.39	10560.77
sugar beets / 80 N	93218.27	44660.58	2.09	48557.69
sugar beets / 120 N	122034.00	50727.81	2.41	71306.19
sugar beets / 160 N	125329.81	56201.67	2.23	69128.14

Source: Authors' calculations.

Table 7. The economics efficiency of selected plants produced for biogas depending on the level of nitrogen fertilisation.

Plant/Nitrogen fertilisation level	Direct costs EUR/ha	Revenue EUR/ha	Gross Margin EUR/ha
Biogas:			
Maize 80N	951	2004	1054
Maize 120N	1010	2158	1149
Maize 160N	1075	2330	1255
Sorghum 80N	616	1614	998
Sorghum 120N	651	1891	1241
Sorghum 160N	690	1991	1302
Virginia fanpetals 40N*	587	685	98
Virginia fanpetals 80N*	623	753	130
Virginia fanpetals 120N*	663	828	165

*I+II swath of Virginia fanpetals

Source: Authors' calculations.

The gross margin analysis (Table 7) showed that in the case of production of plants for processing into the biogas the highest GM was characterized by sorghum (1302 EUR/ha) and maize (1255 EUR/ha). Given the fact, that the production of sorghum was also marked by the highest energy efficiency, it would prefer this plant in the production for processing into the biogas.

Table 8. The economics efficiency of selected plants produced for bioethanol depending on the level of nitrogen fertilisation.

Plant/Nitrogen fertilisation level	Direct costs EUR/ha	Revenue EUR/ha	Gross Margin EUR/ha
Bioethanol:			
maize / 80 N	752	961	209
maize / 120 N	795	1032	238
maize / 160 N	842	1112	269
rye / 40 N	450	668	218
rye / 80 N	420	711	291
rye / 120 N	453	758	305
triticale / 40 N	544	974	430
triticale / 80 N	602	1047	445
triticale / 120 N	642	1127	486
sugar beets / 80 N	1466	2932	1466
sugar beets / 120 N	1596	3201	1605
sugar beets / 160 N	1710	3497	1786

Source: Authors' calculations.

However, in the case of production plants for processing into bioethanol the highest rate of GM was characterized by the production of sugar beets. The level of the indicator was from 4 to 7 times higher compared to the other plants. However, despite of a favorable gross margin rate in the production of sugar beet, but the low rate of energy efficiency, it is not recommended to use this plant for the production for processing into biofuels.

Conclusions

1. The investigations proved that in general, the technologies of crop production at the lowest levels of nitrogen fertilisation have the highest energetic efficiency (except for sugar beets, where the highest efficiency was achieved at the medium level of fertilisation).
2. The comparative analysis proved that the efficiency of crop production for processing into biogas is several times higher than the energetic efficiency of the production for bioethanol.
3. The energetic efficiency of maize produced for biogas is several times higher than the efficiency of this crop produced for bioethanol.
4. The analysis of economic efficiency showed that the highest gross margin was achieved in the production of sorghum which also has the highest energy efficiency and should be preferred in the production of biogas.

5. This will enable improvement of the quality parameters of the raw material, increase the volume of production (yield of ethyl alcohol and biogas), improve the technologies of production of selected energy crops, reduce their production costs and rationalise logistic processes.

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IS IT WORTH BEING SOCIALLY RESPONSIBLE?

Tünde Csapóné Riskó¹ – Ádám Péntek² – Troy Wiwczarowski³

¹*Institute of Marketing and Commerce, Faculty of Economics and Business, University of Debrecen, H-4032 Debrecen, 138 Böszörményi str*

²*Institute of Applied Informatics and Logistics, Faculty of Economics and Business, University of Debrecen, H-4032 Debrecen, 138 Böszörményi str*

³*Institute of Economic Languages and Communication Studies, Faculty of Economics and Business, University of Debrecen, H-4032 Debrecen, 138 Böszörményi str*

Abstract: Several definitions for corporate social responsibility (CSR) exist and these vary greatly as to the activities it should cover and their motivators. Among the benefits of CSR are positive marketing/brand building, brand insurance and employee loyalty. Numerous arguments against CSR prevail, e.g. social responsibility is not a problem that belongs in the sphere of activities a corporation should be addressing or even that CSR distracts businesses from addressing the primary need to concentrate on sales. Thus, the strong economic question: is CSR worth it? In 2014, we carried out a representative survey in Hungary, in which the effects of responsible business practices on consumer purchase behaviour were studied. With our research results, we could show that there is a considerable gap between the apparent interest of consumers in CSR and the limited role of CSR in purchase behaviour.

Keywords: corporate social responsibility, consumer behaviour, consumer responses, CSR actions
(JEL classification:M104)

Introduction

As a reflection of values and ethics of firms, corporate social responsibility (CSR) has received a large amount of research attention over the last decade (Pomering – Dolnicar, 2008), but what is meant by CSR?

It is not a good sign when an entire profession cannot agree on what to call itself. Here is a short list: corporate responsibility (CR), sustainability, corporate social responsibility (CSR), sustainable development, corporate accountability, creating shared value (CSV), citizenship and social responsibility in and of itself. These are all terms that are thrown about with nothing but the glue of disagreement about their ultimate meanings to hold them together. CSR is much broader than philanthropy. Rather, CSR looks to change business operations in a way that maximizes a company's benefits to society and minimizes the risks and costs to society—all while keeping the company focused on creating business and brand value (Epstein-Reeves, 2011).

Dahlsrud found and analysed 37 definitions for the term CSR in 2008 (Dahlsrud, 2008, Bartus, 2008).

Due to the wide range of CSR definitions in existence, a search for commonality can be potentially instructive. After examining various definitions, Buchholz (1991) in Schwartz – Saiia (2012) suggests that there are five key elements found in most definitions of CSR:

- Corporations have responsibilities that go beyond the production of goods and services at a profit.
- These responsibilities involve helping to solve impor-

tant social problems, especially those they have helped create.

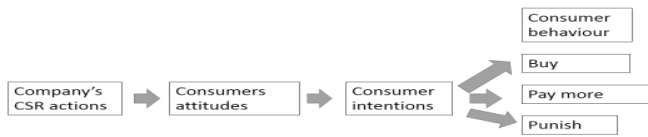
- Corporations have a broader constituency than stockholders alone.
- Corporations have impacts that go beyond simple marketplace transactions.
- Corporations serve a wider range of human values that can be captured by a sole focus on economic values.

Not only the concept and definition of CSR are topics of debates. Academics and corporate executives have been continuously debating the costs and benefits of CSR. It is a fundamental question: is it worth investing in CSR; is it worth being socially responsible; what is the responsibility of companies at all?

CSR in consumer decisions

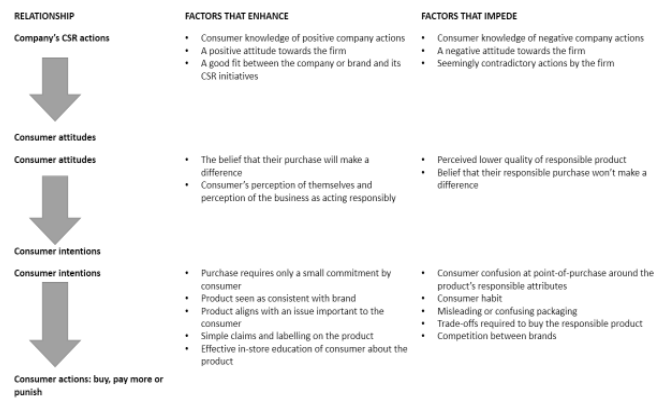
Firms' CSR actions influence consumers' attitudes. Consumers' attitudes shape their intentions, and their intentions affect their behaviour. So, firms' CSR actions may inspire consumers to change their purchasing behaviour (i.e. buy a different product), pay a premium for responsible products, or even deliberately punish those firms that fail to meet their expectations (II). Figure 1. shows a model of socially conscious consumerism, while Figure 2. introduces the relationship between a company's CSR actions and consumer actions.

Figure 1. A model of socially conscious consumerism



Source: II

Figure 2. Relationship between company's CSR actions and consumer actions



Source: II

Kim (2011) mentions that although academic research has addressed the growing focus on CSR, previous research has suggested mixed results, especially regarding the general consequences of CSR on either financial performance of an organisation or consumer responses. Some research studies found no associations between CSR and consumer responses, but other studies noted several positive relationships. The common thread among academic research is that still little is known as to how and when CSR initiatives work. The research of Kim (2011) attempts to answer these related questions, such as “if there are, indeed, direct influences of CSR initiatives on publics ‘evaluations of an organisation and its products’” and “if consume favourable reactions toward CSR initiatives are industry specific” by examining two companies. More specifically, this study examines the relationship between consumer perceptions toward corporations and three corporate communication strategies (corporate ability [CAb], CSR, and hybrid strategy) that are presently in use in the market based on the objectives of an organisation. This study proposes a synergistic model of corporate communication strategy on consumer responses and tests the model using two Fortune 500 companies. The study found that when a company is well-known to consumers, as Motorola and Kellogg, which are used in this study, a CSR strategy is more effective in influencing both consumer corporate ability (CAb) and CSR associations and, in turn, company/product evaluations. Additionally, consumers tend to automatically assume a company is good at making reliable products when they associate the

company with strong CSR, indicating transferring effects of CSR associations onto CAb associations, and onto company/product evaluations. This study results also suggest that the direct influences of CSR associations differ based on industry type. A company that produces high risk involved products, such as Motorola, might not experience the strong CSR association effects on consumer responses as a company in another industry type, such as Kellogg (Kim, 2011).

Doane (2005) writes about the market failure of CSR. One problem here is that CSR as a concept simplifies some rather complex arguments and fails to acknowledge that ultimately, trade-offs must be made between the financial health of the company and ethical outcomes. Moreover, when they are made, profit undoubtedly wins over principles. CSR strategies work under certain conditions, but they are highly vulnerable to market failures, including such factors as imperfect information, externalities and free riders. Most importantly, there is often a wide chasm between what is good for a company and what is good for society as a whole. In her paper, she defines the four myths of CSR. Of the four myths, the one in connection with ethical consumerism is introduced below in more detail:

- the market can deliver both short-term financial returns and long-term social benefits.
- the ethical consumer will drive the change: Although there is a small market proactively rewarding ethical business, for most consumers, ethics are relative. In fact, most surveys show that consumers are more concerned about price, taste or sell-by dates than ethics. In the United Kingdom, ethical consumerism data show that although most consumers are concerned about environmental or social issues, with 83 percent of consumers intending to act ethically on a regular basis, only 18 percent of people act ethically occasionally, while fewer than 5 percent of consumers show consistent ethical and green purchasing behaviours.
- there will be a competitive “race to the top” over ethics among businesses.
- in the global economy, countries will compete to have the best ethical practices.

Györi (2013) adds that not only in Hungary, but even in more developed countries, consumers are more concerned about environmentally conscious, healthy products or products produced in a socially responsible way than can be experienced in their real purchasing behaviours. Even in the case of cheaper “responsible” products, they prefer the “habitual” other product.

Investigations show that there is an unresolved paradox concerning the role of corporate social responsibility (CSR) in consumer behaviour. On the one hand, consumers demand increasingly more CSR information from corporations. On the other hand, their research indicates a considerable gap between consumers’ apparent interest in CSR and the limited role of CSR in purchase behaviour. Consumers report positive attitudes toward buying products from socially responsible companies, but these positive attitudes are not transferred into actual purchase behaviour. A total of 22 individual interviews were conducted by them in a Western European country in

fall 2009 and spring 2010. Overall, the interviewees agreed on the minor importance of CSR compared to other purchase criteria, such as price, quality, brand, country of origin or service. They point out that this result is in accordance with prior research, which shows that CSR is not “at the top of many consumers’ lists” and that only a very small segment of consumers consider CSR when purchasing products (Öberseder et al. 2011, Beckmann et al. 2001; Belk et al. 2005; Bray et al. 2011; Lichtenstein et al. 2004; Mohr et al. 2001).

Although a company’s CSR initiatives alone do not trigger a purchasing decision in most cases, there are several determinants that increase the likelihood of taking CSR into consideration when making purchase decisions. Specifically, consumers clearly distinguish between core, central and peripheral factors. Core factors determine whether CSR is taken into account when deciding about a purchase. If these are not met, CSR will most likely not play a role in a consumer’s buying decisions. These core factors are informational and personal concern. They are both prerequisites for considering CSR in the purchasing process. The most important and complex factor is information on a company’s CSR position. Information consists of two dimensions: level of information and type of information. The former describes the extent of knowledge (e.g., no, little, or extensive knowledge) consumers have about a company’s CSR initiatives. The second dimension focuses on whether the CSR information consumers have is perceived as positive or negative. When consumers have no or only little information about a company’s socially responsible behaviour, CSR will unlikely be considered a purchase criterion. Consumers can also have extensive knowledge of a company’s CSR behaviour. This can relate both to positive and to negative corporate behaviour. When well-resourced with comprehensive CSR information, the respondents believe that it is easier and more likely for them to integrate CSR into the decision-making process. The interviewees stress that the financial situation of a consumer constitutes a central factor in this process. The factor not only describes the consumer’s price perception and willingness to spend money on products from socially responsible companies, but also the actual monetary resources of a person. These findings are in accordance with previous research on the importance of price and the dominance of financial, rather than ethical, values in purchase decisions. Thus sufficient financial resources are a prerequisite for considering a company’s CSR activities as a purchase criterion. Price is frequently only a justification for not considering products of socially responsible companies. Their respondents assume that products of a socially responsible company are more expensive than alternatives. Their respondents agreed that, in most cases, purchasing products of companies with positive CSR activities is related to the assumed price premium of such products: if the price differs only slightly, they would prefer the product of a socially responsible company over a company with a negative CSR profile. When all core factors are met and the central factor – price – is perceived acceptable, their interviews revealed that the respondents consider three additional factors before they incorporate a company’s CSR initiatives into

their purchasing decisions. These peripheral factors include the image of the company, the credibility of CSR initiatives, and the influence of peer groups. The image of a company is, according to the respondents, an indication of whether or not it employs socially responsible practices when conducting business. A positive perception of a company’s image evokes the association that the company behaves socially responsible. Their respondents believe that this, in turn, increases the likelihood to consciously opt for a company’s products and incorporate CSR efforts into their purchasing decisions. The credibility of CSR initiatives constitutes another peripheral factor. The respondents agree that credibility is influenced by the fit between a company’s CSR initiatives and its core business. Many consumers only consider a CSR initiative credible if it is aligned with a company’s core business. The respondents conceive that initiatives totally detached from the business a company is operating in appear less credible and are interpreted as a marketing ploy. Furthermore, initiatives are less credible if they involve only a monetary donation. The influence of peer groups, which is closely connected to the image of a company, is the last peripheral factor. A company’s image frequently develops through interactions with colleagues, friends, or family. Consumer respondents stress that peer groups can also directly influence their assessment of CSR as a purchase criterion. Family and friends can either dissuade or encourage consumers to buy from a socially responsible company (Öberseder et al., 2011).

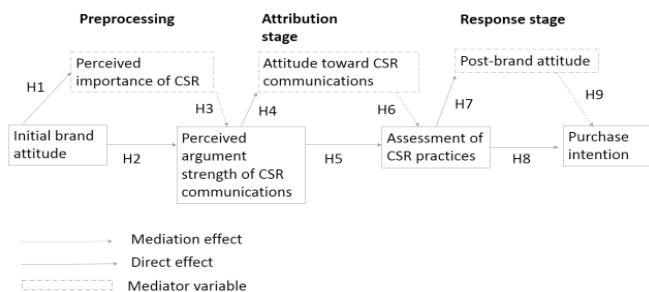
Results from the qualitative study of Pomeroy and Dolnicar (2008) with bank managers and their quantitative study with consumers also indicate low consumer CSR awareness levels. While CSR is effective in eliciting favourable consumer attitudes and behaviour in theory, CSR has not proven its general effectiveness in the marketplace. The low consumer awareness of the various social issues in which firms engage with their CSR programmes suggests that firms may need to educate consumers, so the latter may better contextualise the CSR initiatives seeking to be communicated.

Wang (2008) also found that CSR practices and purchase intention were not directly related. Several possible variables contribute to the reasons why CSR practices do not necessarily relate to financial reward. On the one hand, the impact of CSR on consumers may be dependent on individual consumers’ perceived importance of CSR. For example, consumers may consider CSR communications as favourable public relations messages when they perceive CSR as an important element of business practices. On the other hand, most consumers depend on CSR communications for gathering information about corporations’ CSR practices; corporations have been increasingly involved in various CSR practices and communications in an attempt to improve their reputations and to promote their brands or products. As a result, CSR communications play an important role in shaping consumers’ attitudes toward CSR communications and assessments of corporations’ CSR practices. However, consumers may process CSR communications differently and, in turn, form attitudes toward CSR communications and assess corporations’ CSR practices differently. These variables appear to be correlated

sequentially, which may, in turn, influence consumers' attitudes toward corporations and purchase intentions toward CSR brands (Osterhus, 1997; Park et al. 2004; Bowen, 2005; David et al. 2005, Wang – Anderson, 2011).

Despite the increasing importance of CSR communications for effective reputation management, there has been limited understanding of the variables and processes involved in consumer response to CSR communications. The study of Wang – Anderson (2011) proposes a three-stage model (Fig.3) and investigates the mediating roles of perceived importance of and attitude toward CSR in consumer response to CSR communications. The results revealed that perceived importance of CSR mediated the effect of initial brand attitude on perceived argument strength of CSR communications in the pre-processing stage. Next, attitude toward CSR communications mediated the effect of perceived argument strength of CSR communications on assessment of CSR practices in the attribution stage. Finally, post-brand attitude mediated the effect of assessment of CSR communications on purchase intention in the response stage. The results revealed that the relationship between CSR communications and purchase intention might be more complex than suggested by previous research (Wang – Anderson, 2011).

Figure 3. The three-stage model of consumer responses to CSR communications



Source: Wang – Anderson, 2011

The Applied Research method: Kruskal-Wallis (KW) test

The Kruskal-Wallis test is applied in cases where there is one nominal variable and one ranked variable. Kruskal-Wallis tests whether the mean ranks are the same in all investigated groups. Usually, the Kruskal-Wallis test is applied when the analyst possesses one nominal variable and one measurement variable, i.e. whenever the experiment would normally involve analysing data using one-way anova, but the measurement variable does not meet the normality assumption of a one-way anova. Some researchers argue that unless there is a large sample size and one can clearly demonstrate that the data are normal, one should routinely use Kruskal-Wallis; they think it is dangerous to use one-way anova, which assumes normality, in cases when one is unsure whether one's data are normal. In fact, one-way anova is not very sensitive to deviations

from normality. Reports on simulations performed with a variety of non-normal distributions, including flat, highly peaked, highly skewed, and bimodal, showed the proportion of false positives being always around 5% or a little lower, just as it should be. For this reason, the Kruskal-Wallis test is not recommended as an alternative to one-way anova.

The Kruskal-Wallis test is a non-parametric test, which means that it does not assume that the data come from a distribution that can be completely described by two parameters, mean and standard deviation (the way a normal distribution can). Like most non-parametric tests, it is performed on ranked data, requiring conversion of the measurement observations to their ranks in the overall data set: the smallest value receives a rank of 1, the next smallest receives a rank of 2. The remaining sets are ranked accordingly. In substituting ranks from the original values, one risks losing information, which might render this a somewhat less authoritative test than a one-way anova.

Yet another assumption of one-way anova is that the variation within groups is equal (homoscedasticity). Although the Kruskal-Wallis test does not assume the data to be normal, it does assume that the different groups have the same distribution and groups with different standard deviations have different distributions (I2).

Representativeness of the Sample

A survey was conducted 1-30 March 2014, with the involvement of 1,000 consumers in Hungary. Representativeness of regions and settlement types had already been ensured, thus their structure fully met the quota stipulated by the Central Statistical Office (quota sampling).

In some regions and selected settlements, the principle of random walking was applied, which ensures complete randomness to select the appropriate respondents (each person had the same chance to be involved in the sample). The essence of the method is that starting addresses were provided for each interviewer at each selected region and settlement (regions and settlements matching the population ratios in the sample). Starting from the starting address – in the order of increasing house numbers – interviewers started the interviews at the third house of the same side of the street, then they continued the interview with the third house again. When preparing the sampling plan, we took into consideration family house and apartment house areas, as well.

Of the residents of the visited households, the appropriate person for the interview was selected using the birthday key method. This means that the interviewer asked the number of residents above 18 years of age. As a second step, the consumer above 18 years of age and having the birthday closest to the date of the interview was selected. Thus, with this method, complete randomness was ensured in the second step, as well. Random error of the sample was $\pm 1.9\%$ -3.2%.

Finally, in order to ensure representativeness, the sample was corrected with multidimensional weighting (based on gender and age). Thus, the sample represents the population of Hungary regarding four factors (region, settlement type, gender, age).

Results and Discussion

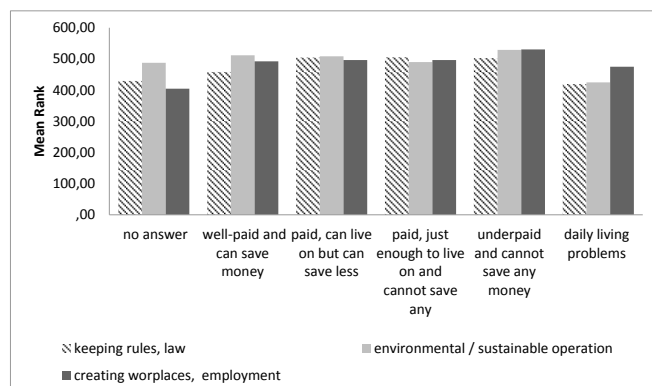
With our first question, we wanted to find out **what our respondents mean by Corporate Social Responsibility**. We offered them the following alternatives: (1) keeping rules, law; (2) environmental / sustainable operation; (3) creating work places, employment; (4) supporting arts, culture, sports; (5) creating, supporting foundations; (6) ensuring healthy, balanced work environment; (7) ethical behaviour toward all business partners; (8) fair communication, behaviour towards consumers; (9) good marketing trick; (10) responsibility towards its (social and natural) environment. For each answer, they had to determine its relation to CSR in a scale from 1-5.

Before introducing the results of the Kruskal-Wallis test, it should be noted that the average and standard deviation of the results have also been studied. We can state that the relation between CSR and the above provided alternatives is strong; it is above 4.00 with the exception of “just a marketing trick” which average was 3.88 only. We received the highest averages for the following alternatives: creating workplaces, employment (4.662); keeping rules, law (4.635); environmental / sustainable operation (4.624); responsibility towards its (social and natural) environment (4.57). We have to add that the lowest standard deviations belong to these high averages, so the opinions are the most unified for these answers.

Next, the results had been grouped and evaluated by level of education, legal status and financial situation, as well. Results can be seen in Fig. 4-6. We found significant deviations in the cases of these three groups. These deviations are as follows:

Regarding the **financial situation** of respondents, for well-paid respondents, job creation and employment are part of CSR. For people with daily living problems, keeping rules and following the law are not part of CSR. Results can be seen in Fig. 4.

Fig. 4. Relation of the provided alternatives to CSR by financial situation of respondents

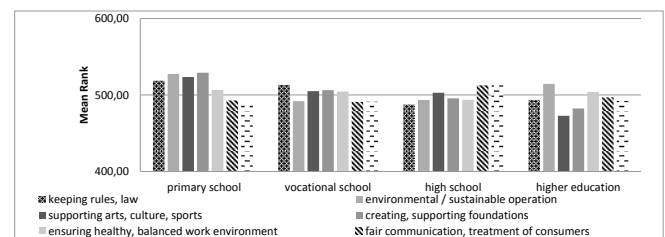


Source: Own research, 2014

By level of education, respondents with high school certificates also believe that keeping rules and following the law are not parts of CSR. This is the second responsibility of companies after economic responsibility: to meet rules and legal regulations (called legal responsibility). Thus, keeping rules and following

laws can automatically be expected from companies. For these respondents, CSR is something more and goes beyond all these. Ensuring a healthy, balanced work environment is part of CSR for each studied group. Supporting arts, culture and sports is part of CSR for each studied group, except for respondents with a higher education degree. The reason behind this result can be connected to their better informedness, since the recent definition of CSR and the activities behind this phenomenon is rather about the creation of shared value, i.e. creating something new together with several stakeholders in the company which is mutually valuable. Sponsorship is undoubtedly important, even essential for some groups, but this activity is something different. It is not about creating shared value. Results can be seen in Fig. 5.

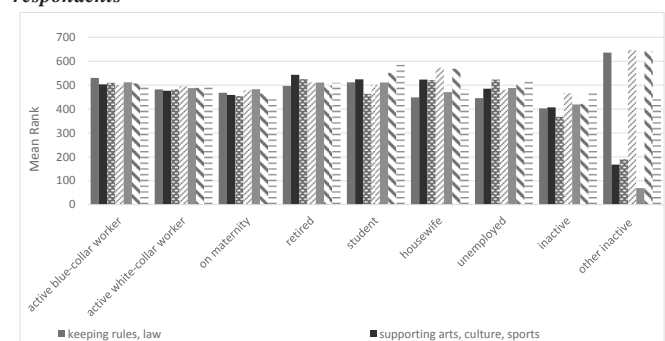
Fig 5. Relation of the provided alternatives to CSR by education level of respondents



Source: Own research, 2014

Regarding the **legal status** of respondents, keeping rules and following the law is not part of CSR for groups of respondents having no job. For students, CSR is only a good marketing trick. Since these respondents represent the future, they are the next generation of corporate executives and the consumers a company does not yet have; therefore, this approach should be corrected through proper courses on e.g. business ethics, managerial ethics, CSR and sustainability. These individuals should be familiar with the essence of CSR. CSR should not be only a marketing tool (even though, for some companies, it is), it should be something totally different: it should rather be a managerial approach. For active worker respondents and respondents on maternity leave, arts, culture and sports are not parts of CSR. For student and housewife respondents, fair communication and behaviour towards consumers are parts of CSR. Results can be seen in Fig. 6.

Fig 6. Relation of the provided alternatives to CSR by legal status of respondents



Source: Own research, 2014

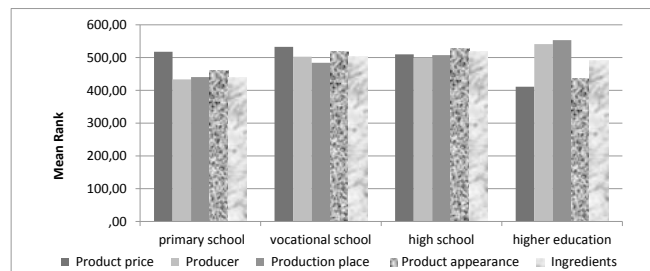
We also wanted to use **the above listed information to understand how to influence the purchasing decision of our respondents:** (1) product price; (2) producer; (3) place of production; (4) ingredients; (5) environmental impact of the product (6) product safety; (7) healthy product; (8) product appearance; (9) price-value ratio; (10) shelf life. Respondents had to evaluate the importance of the listed points of views in their purchasing decision in a scale of 1-5.

Analysing the results, it can be stated that the received averages are around 4.3 and their standard deviation is around 0.8. Value 1 means that the information does not influence, while 5 means that the information influences considerably the purchasing decision. We received the highest averages for product price, price-value ratio and shelf life. The received average for product price and price-value ratio reached 4.72 with very low standard deviations. The result shows that the respondents are rather price sensitive. The high average received for shelf life indicates that this is really important information when buying mainly a food product. The received lower averages for product safety, ingredients and healthy product can be explained in that these types of information can be found, read and understood not so easily or in that price sensitivity is simply the dominant factor for such consumers. It should be pointed out that the environmental impact of the product and the producer are the least important types of information for the respondents from among the above mentioned information influencing their purchasing decision.

In addition to the above explained results, we tried to find correlations again between the demographic variables and the received results. **By level of education**, we found significant deviation in the cases of price, producer, place of production, ingredients and product appearance, as well. As can be seen in Fig. 7, with the higher level of education, the producer becomes increasingly important. The same conclusion can be drawn for the place of production. These results can be reasoned with the higher levels of study and the informedness of respondents on the social, environmental and moral impacts of companies, as well as because these respondents expect responsibility from companies for all these areas of impact. This responsibility is seemingly obvious for these educated respondents. Information on the responsible - or even on the irresponsible - business practices of companies is very important for them and influences their purchasing decisions. Regarding the place of production, it can be expected that they are more familiar with the financial impact of their purchasing decisions. This means that through buying local products, they can contribute to the economic development of their homeland. For them - in comparison to the other studied groups - price and product appearance are the least important. This consumer behavioural factor can be reasoned with the fact that to their high education level is probably associated with higher incomes, thus they can be expected to be living in a good financial situation and they can afford to rank product price lower as a not so important factor influencing their purchasing decisions. As regards ingredients, those respondents with the lowest education level have to be pointed out, since for them this information was the least important.

From among the five listed factors in Fig. 7, price has an extremely high rank. This result can be explained by their probably modest financial circumstances.

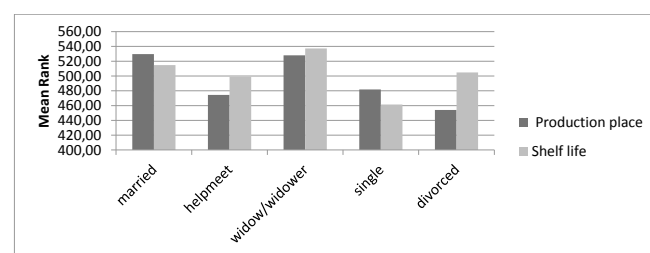
Fig. 7. Significant deviations between the educational level of respondents and certain aspects influencing the buying decision process of consumers



Source: Own research, 2014

Less conclusions can be drawn in connection with **marital status**. From among the above listed and studied ten aspects, significant deviations were found in relation to the place of production and shelf life only. As Fig. 8 shows, for single (mainly young) respondents, shelf life is not important when buying a product. For the other studies' groups, the ranking of this aspect is considerably higher. Place of production is an important aspect for married and widow respondents. They presumably belong to the older generation. For this group, the importance of shelf life is similarly important in their purchasing decision. In the case of married respondents, the result can be explained through their sense of responsibility towards the family.

Fig. 8. Significant deviations between the marital status of respondents and certain aspects influencing the buying decision process of consumers

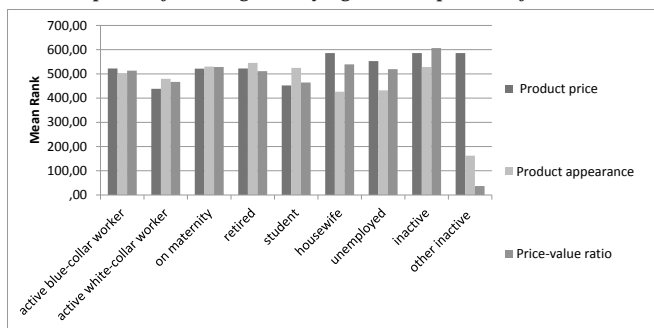


Source: Own research, 2014

Regarding the **legal status** of respondents, significant deviations have been found in connection with product price, product appearance and price-value ratio. As can be seen in Fig. 9, product price is not so important for our active white collar worker and student respondents. In the case of the former group, the probably higher income associated to their position could be the reason for this result. In the case of students, the result is probably based on the lack of personal income, since these respondents mostly live together with their parents and spend their parents' money, rather than their own. Since they are young, they may not be well informed on the business practices of companies, on the question of responsibility and, in general, on the possible impacts of their purchase decisions. Therefore, their buying preferences are rather different. How-

ever, we should keep in mind that they are one of the most important groups, since they are the consumers of the near future. Through proper education, they could and should be shown in the group of conscious consumers. For inactive, other dependent and housewife respondent groups, price is a very important factor, which can be reasoned unambiguously with their modest financial situation. Product appearance is remarkably negligible for the other dependent respondents. Price is the most important factor for them from among the studied factors, and the price-value ratio is even less important than product appearance. These results can unambiguously be reasoned with the lack of income.

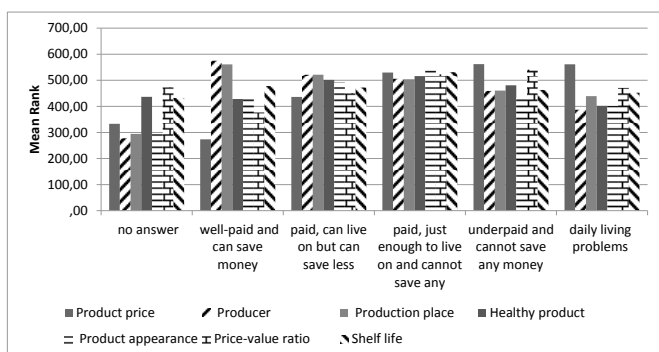
Fig. 9. Significant deviations between the legal status of respondents and certain aspects influencing the buying decision process of consumers



Source: Own research, 2014

The final correlation is related to the **financial situation of the families**. Results can be seen in Fig. 10, which clearly shows that, with the deteriorating of a respondent's financial situation, the importance of price is increasing. The place of production and the producer grow less important, in the same order. Healthy product, product appearance, price-value ratio, shelf life are interestingly most important for the group in the middle. The reason for such results is probably that they are trying to find the best solution, best value and best product, compared to their limited financial situations. They "do not have money" to buy useless, unhealthy or expired products, such as food.

Fig. 10. Significant deviations between the financial situation of respondents and certain aspects influencing the buying decision process of consumers



Source: Own research, 2014

Conclusions

Our results support the present practice in terms of the definition of CSR. Almost all the listed alternatives are strongly related to CSR by the respondents. The highest average received for the "creating work places, employment" alternative indicates the importance of this activity and this can also be explained in that - at least in Hungary - CSR today is mainly linked to responsible employment. There are events, including conferences and even the CSR Market 2015, which focus on responsible employment and responsible employers. This message may have reached the respondents and can be a reason for the received results. When reading articles on CSR and the main activities carried out by companies as CSR activities, it can be read that around two third - three quarter of the companies' CSR budgets are usually spent on activities targeting employees. It is good to see that CSR is not considered to be a mere marketing trick by most of the respondents, but only by students. This opinion can be 'modified' with proper education on CSR.

Regarding the different factors influencing purchasing decision, our results underline the importance of price and price value ratio. The producer and its responsible or irresponsible business practice are not important information for the respondents.

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TOURISM, MEDITATION, SUSTAINABILITY

Attila Lengyel

Collage of Szolnok

Abstract: *The economic value of meditation based services is clearly demonstrated by a growing number of companies using such services. In the USA one quarter of the companies offer in-house meditation training to their employees. On the other hand, the number of those who think that the western consumption paradigm in its present form is unsustainable is also increasing. In addition to its business value, meditation and its most popular western form mindfulness is a practical tool that can catalyze a change in our world view and value system. A basic precondition for learning meditation techniques is to have an open, receptive, feminine attitude. As it is revealed in the present research, tourists poses a significantly elevated level of openness to new experience. This increased openness together with an upward trend for spiritual experiences can create a synergy for certain destinations, accommodation types, tourism locations to expand their service portfolio with meditation based services. While favourable physical and psychological effects of traditional tourism services fade within a few weeks, meditation is a portable tourism product which can be taken home and practiced regularly in a virtually cost-free way. By learning and practicing meditation the extremely poor physical and psychological condition of the Hungarian population could be improved in a preventive and cost-effective way. As the level of mindfulness is positively correlated with sustainable behaviour by offering meditation services tourism might take on a new level of significance in the battle for sustainability.*

Keywords: *tourism, meditation, sustainability, openness to experience, trends*

Introduction

In the 289-page document of National Development 2030 (mirror translation of Nemzeti Fejlesztés 2030) the Hungarian equivalents of the word „sustainable” or its derived forms appear 247 times and in the 81-page document titled Concept of National Tourism Development (mirror translation of Nemzeti Turizmusfejlesztési Konceptió) 2024 37 times. Sustainability has become a commonplace and part of educated rhetoric. Since E.F. Schumacher’s famous book „Small is beautiful” was published in 1973 (Schumacher 1973) alternative economic theories emphasizing the priority of spiritual values over purely economic concerns have been gaining momentum (Kocsis 2011; Prónay, Málóvic 2008; Boudrillard 1998; Randers 2012). In spite of the myriads of scientific publications, action plans, conferences, educational efforts in the last five decades humanity is still headed for worst case climate scenario (RCP8.5) as clearly demonstrated in the Global Carbon Budget 2014 report (Le Quéré et al., 2014). There are other planetary boundaries we have already transgressed (Steffen et al., 2015). There are concerns that the Paris climate conference (COP21) has failed to make a breakthrough in global mitigation as countries can decide how much they want to contribute to mitigation efforts in their INDC (Intended Nationally Determined Contributions). Sustainability is an elusive term and has been defined by many with various factors in mind (Hammond, 1998, Prugh, Constanza & Daly, 2000, Wills-Johnson, 2010). However we want to define it there are basic and at the same time very difficult questions to answer. What do we want to sustain? Why those things? How? For what period? What sacrifices might be necessary for

the stakeholders involved? How best measure it? Answering these questions and basically all others in connection with sustainability supposes personal subjective value judgements and it will also have to involve a paradigm shift in our world view, attitude and behaviour (Capra, 1982, Zsolnai, 2010, Diamond, 2011). *The hard question of sustainability is: How can we make people change their world view, attitude and behaviour?* The aim of the present paper is twofold. On the one hand it attempts to demonstrate that the tourism context is exceptionally suitable for acquiring meditation skills for the first time or even for deepening insight already gained through practice. The other aim is to demonstrate through analysing Google trends data that next to the supply side potentials there is a marked increase in the online interest concerning meditation and mindfulness. It provides a business case for the introduction of more meditation-based services in the tourism industry both globally and in Hungary in particular.

1. Background of research

1.1 Tourism and wellbeing

A community can function sustainably in the long run only if the physical and psychological health of its members is guaranteed. Physical and psychological health is perhaps the most important aspect when considering quality of life. The Gallup-Heathway Well-Being Index examines and evaluates six areas, three of which describe physical and psychological health. Based on statistical data in OECD’s „Health at a glance” reports it is not an exaggeration to declare that physically and psychologically the Hungarian population is in a strikingly bad

shape. We ranked 2nd for cardiovascular mortality out of the examined 26 countries and in 2011 we still ranked 2nd out of 33 OECD countries. For self-reported health we ranked 23rd and 30th respectively in the same years. As for cancer mortality we retained our 1st place throughout this 10-year period (OECD, 2003, 2013). If we examine the volume of domestic tourism between 1990 and 2011 we can see a 150% increase (Polgár et al, 2006; MTZrt, 2012). Given the average length and frequency of domestic holidays in Hungary the question arises: Do domestic vacations have any long-term effects on the physical and psychological well-being of the population?

The fact that the Concept of National Tourism Development and another strategic government document the Curing Hungary Health Industrial Program (mirror translation of Gyógyító Magyarország Egészségipari Program) sets the improvement of the quality of life of the Hungarian population as a strategic goal for the tourism industry makes this question even more relevant. The former actually lists the improvement of health among the expected results of the program. In his 2007 study Gábor Michalko found that the frequency of holidays and the level of happiness are positively correlated (Michalkó, 2010). However, it is important to point out that it does not necessarily mean a causal relationship. As Nawijn highlights: „it is not established that this correlation is due to an effect of holiday trips on happiness or an effect of happiness on holiday-taking.” (Nawijn, 2012: 37).

In Michalko's survey the contribution of travelling to happiness ranked relatively high, however, when participants were asked how important travelling was in their life, domestic travel was ranked lower than buying new gadgets and foreign travel was less important than buying new clothes. This seeming contradiction can be resolved by assuming that the positive effects of holidays on wellbeing and happiness is observable during the holiday most significantly. This assumption is supported by peer-reviewed literature. The length of the fade-out period of positive vacation effects ranges from a few days (De Bloom et al, 2013), a few weeks (Nawjin et al, 2010), to a month (Kühnel & Sonnentag, 2011). Based on these findings and considering the average length and frequency of holidays taken by Hungarians it is questionable that traditional tourism products can significantly improve health and quality of life.

1.2 *Tourism, meditation, mindfulness*

Meditation based tourism services are special products in the wellness sub segment of tourism. Their uniqueness results from the fact that unlike traditional wellness products such as massage, fitness trainings, bubble bath, saunas etc., meditation is a „portable product” which can be taken home and practiced virtually cost free. Certainly there are other skills that you can learn and take home with you like skiing or handicraft skills acquired during an animation program. However these activities either do not have such manifold and clinically proven physical and psychological benefits as meditation or there are certain obstacles (financial, geographical etc.) to practicing them. Interest in Complementary and Alternative Medicine (CAM) therapies has been growing steadily in recent

years (Csörgő, Bíró, Kopkáné & Müller, 2012). Meditation (mindfulness) is one of many techniques that can be utilized in CAM treatments. The 2014 trend report of SpaFinder describes mindfulness and mindful living as „Über trend” in the wellness market. Forest bathing, top trend in the 2015 SpaFinder report, also uses mindfulness in its relaxation exercises. Keeping up to date regarding changes in consumer preferences and behaviour is the basis of successful operation in a highly saturated and competitive market. As Müller et al. point out in their paper „Trends change fast, but being aware of them is crucial both in the for-profit and non-profit sector as it is a factor of competitiveness.” (Müller et. all 2013:25). By analyzing Google Trends data, the present research provides reinforcement to these findings. Meditation has been part of the service portfolios of spa and wellness establishments around the world. However in Hungary out of the 2312 (KSH, 2015) commercial accommodation service providers fewer than 20 offer some form of meditation. It is less than 1 % of all commercial accommodations. Examples of accommodation service providers offering meditation include Oxigén Hotel**** és Zen Spa, Lifestyle Hotel Mátra****superior, Barátság Gyógy-és Wellness Szálloda****superior and Panoráma Wellness Apartman Hotel****.

Mindfulness is an umbrella term for certain, mainly Buddhist, meditation techniques such as vipassana, satipaṭṭhāna, and anapanasati. Led by professor of medicine John Kabat-Zinn the first MBSR (Mindfulness Based Stress Reduction) programs were launched at the Stress Reduction Clinic in 1979. Today MBSR programs are coordinated by Massachusetts University Mindfulness Centre.

Its positive physical and psychological effects have been proved by many clinical and non-clinical researches abroad especially in the United States (Miller et al 1995; Kabat-Zinn 2003; Baer 2003; Kristeller 2013). Mindfulness was found beneficial in clinical tests with cardiovascular conditions (Schneider et al, 2012), high blood pressure (Hughes et al, 2013) or with cancer patients (Matchim, 2010). Its positive effects were tested in schools (Weijer-Bergsma et al, 2012) and work places (Reb et al, 2012). From a sustainability perspective one of the most relevant research findings is positive correlation between mindfulness and sustainable behaviour. (Jacob, Jovic, & Brinkerhoff; 2008, Amel, Manning, & Scott, 2009; Rosenberg, 2004; Brown, & Kasser, 2005). Meditation in the western world is becoming popular mainly as „mindfulness”. The increasing popularity and significance of mindfulness programs are demonstrated by the fact that the English parliament created a mindfulness committee in May 2014 with all parties participating to examine how mindfulness could be utilized in health care, education and in the workplace. Prior to this MP had been participating in in-house mindfulness trainings for a year.

1.3 *Tourism and sustainability*

It is not easy to reconcile forecasts for tourism arrivals for the next few decades with the pressing issues of global warming. According to UNEP projections, by 2050 international tourist

arrivals will be around 2.6 billion, which is 30% less than the BAU scenario. Even this “greener scenario” means a 251 % increase in solid waste disposal, a 154 % in energy consumption, 152 % in water consumption and a 131% rise in greenhouse gas emission. At the same time tourism is considered as one of the top ten industries instrumental in contributing to the transition to a greener global economy (UNEP, 2011). Several authors raised concerns about the unsustainability of present day mass tourism, some even advocating degrowth of the industry (Hall, 2009, Hollenhorst, Houge-Mackenzie & Ostergren, 2014). The optimistic scenarios of UNWTO or WTTC are questionable as the main contributor of tourism’s greenhouse gas emission long-haul air travel is and projected to be growing exponentially (Scott, Hall & Gössling, 2012). The GHG emission of tourism estimated to be around 5-8 % (UNWTO-UNEP-WMO, 2008), can reach an astonishing 40 % of all emissions globally according to some researchers (Dubois & Ceron, 2006). Technological innovations aimed at reducing fuel consumption per seat kilometre might result in a 25 % reduction in aviation-related GHG emission, however, even that would be far from satisfactory considering how urgent the climate problem is. There are serious efforts within the industry towards a higher level of sustainability. Corporate tourism giants such as TUI or Thomas Cook have a dedicated section devoted to detailing their sustainability efforts on the front pages of their corporate websites and as there is a growing number of green-minded tourists on the market (Wehrli, Schwarz & Stettler 2011), more and more smaller firms also incorporate sustainability in their policies. Besides the demand side pressure, companies engaging in sustainability measures can save costs and also become more prepared for the probably harder legal environment after COP21 in Paris. However as Saarinen points out, there is still a lot of greenwashing and „... the industry as a whole and its customers need to have firmer guiding regulative frameworks for creating a wider responsibility and a path towards sustainable development.” (Saarinen, 2014:11)

1.4 Meditation and sustainability

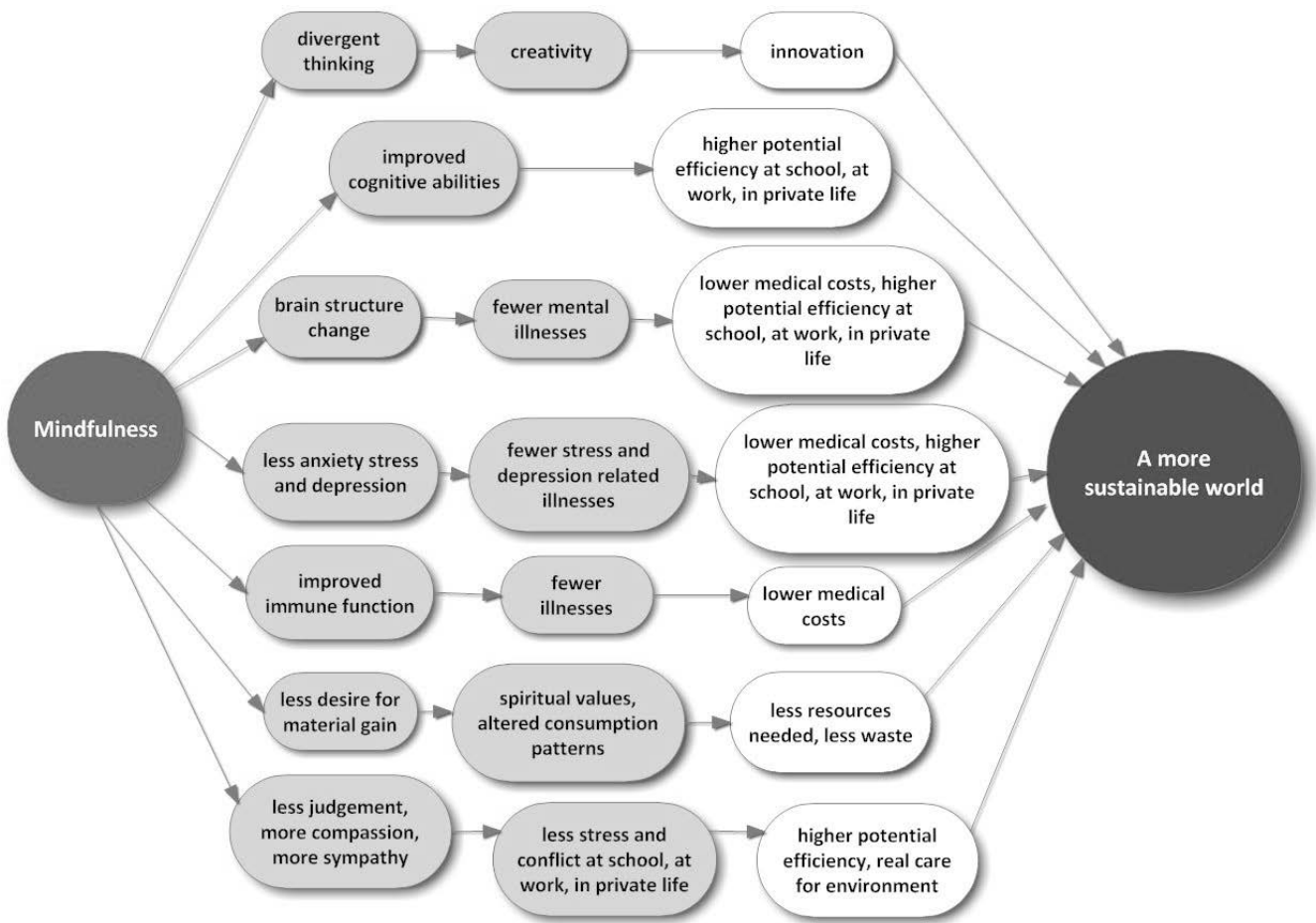
Long term sustainability is not just about technological fixes. Our world view, value system, way of thinking is really what is unsustainable. As it was pointed out in the introductory section, the hard question of sustainability in the long run is how an inner transformation concerning our world view, value system and way of thinking is possible. Such transformation on the individual level can be brought about by a systematic, regular and voluntary inner exploration and growth. Figure 1. demonstrates proven benefits of mindfulness meditation and how these benefits can be the basis of a more sustainable world. Numerous studies explored how mindfulness and sustainable attitude and behaviour are related. Mindfulness can positively influence consumerism and materialism in general. As Rosenberg points out “Mindfulness may enhance one’s awareness of potentially accessible cognitive-behavioural processes underlying consumption that have become relatively automatic. It can make consumption more a matter of choice

than of impulse clouded by the illusion of choice.” (Rosenberg, 2004:107). This positive association has been confirmed empirically by other authors as well (Brown & Ryan, 2004, Brown & Kasser, 2008. Jacob, Jovic, & Brinkerhoff, 2009, Amel, Manning, & Scott, 2009, Ericson, Kjønsstad & Barstad, 2014). Out of the numerous psychological and physical benefits of mindfulness its stress and anxiety reducing potential seems to be one of the most important. The Hungarian population has been in an extremely poor state of health for decades. “In 2000 out of 26 OECD countries Hungary ranked 2. for cardiovascular mortality and 23. for self-reported health status. In 2011 it was still ranked 2. for cardiovascular mortality and 30. for self-reported health status out of 33 countries. For cancer mortality it had retained its 1. place during the 10 year period.” (Lengyel, 2015). “Apparent links between psychological stress and cancer could arise in several ways. For example, people under stress may develop certain behaviors, such as smoking, overeating, or drinking alcohol, which increase a person’s risk for cancer.” (NCI, 2016). While the same indirect mechanism is also true for stress and heart disease, the strong link between them is a scientific fact (Ghiadoni et al., 2000, Gu, Tang & Yung, 2012). *All in all, mindfulness seems to be able to contribute largely to becoming more sustainable mentally, psychologically, physically and economically as well.*

1.5 Meditation and economic rationality

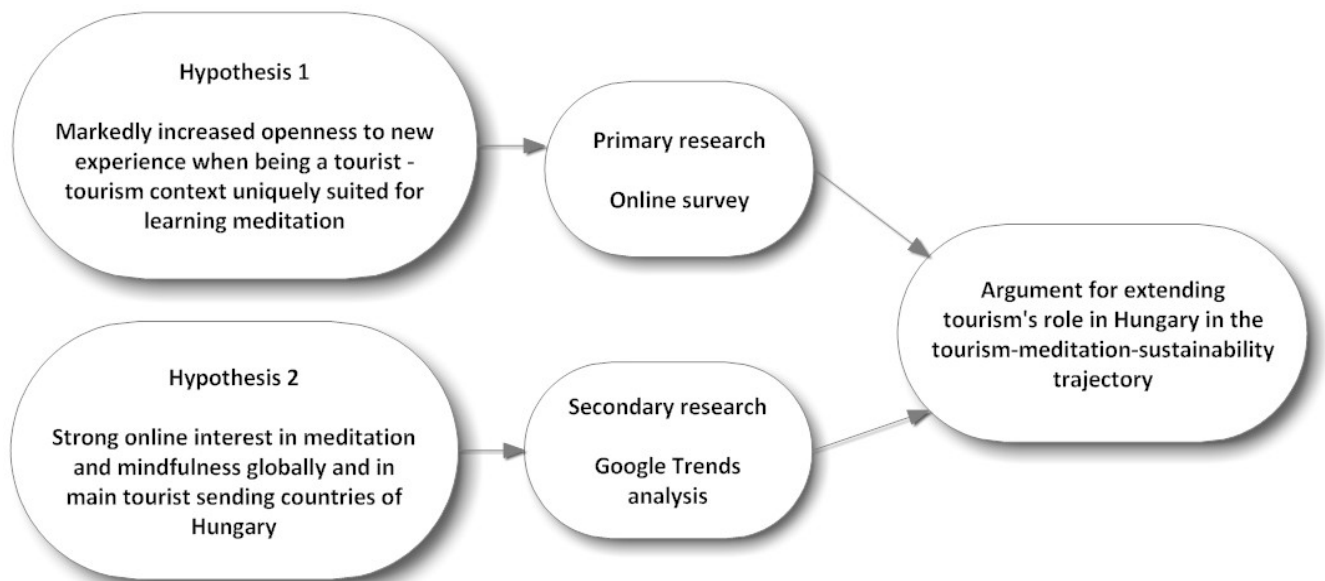
The market case for meditation based services is apparent when looking at the corporate world, especially companies in the USA. „Search inside yourself” was launched in 2007 at Google offering free 30-minute guided meditation sessions during working hours to the employees. Other corporate giants such as Intel, Monsanto, Procter & Gamble, Apple, Goldman Sachs Group, Unilever or Deutsche Bank also provide in-house meditation services. The corporate interest in meditation is probably best explained by the facts that meditation’s beneficial effects on executive control (Teper & Inzlicht, 2012), creativity (Ren et al., 2011), physical and psychological health are measurable cost savers and profit boosters. According to Matrix a study financed by the European Union Health Program in the EU 27 countries a yearly 620 billion Euros are spent on treating work-related depression problems. It is 10 times bigger than the yearly GDP of Hungary and does not include cost of psychological and psychosomatic problems outside the workplace. As meditation tested in clinical research was found to be effective in relieving or curing stress-related problems it has huge cost saving potential in the long run. Figure 1. gives a summary of the positive effects of meditation. Effects in the light blue boxes are documented in peer-reviewed literature while the last elements of these effect chains show probable positive, financially measurable and pro-sustainable outcomes.

Figure 1: Benefits of meditation and their potential effect on sustainability



Source: Own editing

Figure 2. Methodological construct of the research



Source: Own editing

2. Material and method

2.1 Methodological construct of the research

The research methodology had a primary and a secondary component. Based on these the hypotheses and the objectives of the present research are outlined in Figure 2.

Examining openness to new experience changes while being a tourist and online trend for meditation and mindfulness together is supported by at least two arguments. In order for tourism to have a much bigger role in familiarising people with meditation and mindfulness than it has now, it must really significantly raise people's openness to new experience as it is the most important condition to be able to have an insight into what meditation or mindfulness really is. However, even if being a tourist does result in a significantly heightened level of openness to new experience, without a rising interest in meditation and mindfulness it remains a pure scientific discovery without any practical economic consequences.

2.2 Primary research

The primary research was carried out to establish a supply side argument for expanding tourism's role in promoting and offering meditation based services. As it was pointed out in section 1.2, meditation including its mindfulness type version has been part of the service portfolio of spa and wellness service providers. However, it has not yet been explored what makes the tourism context unique for imparting meditation knowledge and skills to people. Meditation requires a largely receptive, feminine attitude (Osho 1975, 1979). *Openness to new experience is the most important prerequisite of learning meditation.* On the other hand openness to new experience is also relevant because, in spite of cultural globalization, meditation is still viewed by many as something culturally alien. *The questions of openness to new experience changes when being a tourist has not been the subject of tourism research in Hungary before.* Empirical research in connection with openness to experience in a tourism context is sporadic in the literature (Schneider & Vogt, 2012, Jani, 2014). The research carried out by Schneider and Vogt was aimed at exploring how hard and soft adventure tourists evaluated their openness to experience in their daily lives. From Jani's research it is not clear whether tourists were asked about their openness while being tourists or when in everyday circumstances. With these in view it has to be emphasized that *the survey for the present study attempted to find out whether being a tourist results in a higher level of openness to new experience as opposed to general openness in everyday circumstances, and if yes to what extent.* An online survey using the Online Research Platform of Szent István University was created and sent to 75 people with certain known demographic characteristics (mostly women, middle aged, educated, higher than average income). These first participant were instructed to forward the link to the survey to people that they believed to possess similar demographic characteristics to theirs. The final sample contained 478 respondents and as it was a snowball type sampling procedure

general conclusions are limited. This methodology was used to obtain a sample whose main demographic characteristics show strong similarity to that of the typical wellness tourist. Examining the changes in the openness to new experience in potential wellness tourists in particular is warranted by the fact that it is this segment which buys meditation based tourism services in Hungary at the moment.

2.3 Secondary research

Google Trends data was analysed to find with two objectives in mind. On the one hand it was hoped to provide further evidence to support SpaFinder's findings regarding trends for mindfulness. On the other, it aimed to explore popularity trends for meditation and mindfulness in the biggest tourist sending countries for the base search terms "meditation" and "mindfulness". The words "meditation" and its related terms as well as "mindfulness" and its typical search compounds were investigated. Search terms were chosen based on three different methods. The Google Adwords Keywords tool was used to find popular search expressions in connection with the two base terms. Google Trends also provides some popular search terms for the base words. Lastly, some of the expressions were taken from own search experience. Several peer-reviewed articles have proved how valuable Google Trends data can be in forecasting and statistical analysis. It has been successfully used as a robust epidemic surveillance tool (Carneiro & Milonakis, 2009), for the quantification of trading behaviour in financial markets (Preis, Moat & Stanley, 2013) or for forecasting private consumption (Torsten & Vosen, 2009). Utilization of Google Trends in tourism research has so far been insignificant (Song et al., 2011, Athanasopoulos et al., 2011). Choi and Varian give a thorough overview of Google Trends literature, advantages and limitations and explain the essence of its statistical methodology as follows "The query index is based on query share : the total query volume for the search term in question within a particular geographic region divided by the total number of queries in that region during the time period being examined. The maximum query share in the time period specified is normalized to be 100 and the query share at the initial date being examined is normalized to be zero." (Choi & Varian, 2012:4). Times series data in a weekly breakdown for each search term was downloaded in cvs format from the Explore section of Google Trends. Single word terms as well as multi-word search expressions were examined between 2004 and 2015. I examined the changes in search popularity between 2004 and 2015 and especially for the years 2014-2015 in the case of 68 search terms related to the word "meditation" and 61 search items containing the words "mindful" or "mindfulness".

3. Results and discussion

3.1 Online survey

As it had been expected from the sampling method used, the sample (n=478) was found to be overrepresented in terms

of certain demographic characteristics (Table 1). If we compare the demographic profile of the typical wellness tourist described in the literature (Lehto et al. 2006, Smith & Puczko 2009, Voigt, 2010) with the demographic characteristics of the sample a strong similarity is observable. This similarity is significant because in Hungary today the most likely consumer of meditation based services on the tourism market is the wellness tourist.

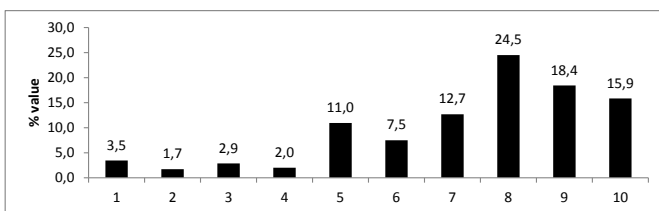
Table 1: Demographic profile of the typical wellness tourist in literature and the sample.

Demographic variables	Gender	Age	Education	Income level
Literature	mostly female	over 30	mostly college or university degree	above average
Sample	female = 74%	> 30 years = 76%	≥ college or university degree = 72%	> average = 80 %

Source: Own editing based on Smith & Puczko, Voigt & Lehto and own research data

The survey contained the following question about openness to new experience: „When you travel for pleasure, do you become more open to new experience than you are in your everyday life? The description of the two end values of the 10-point rating scale were: 1=Not at all, 10= Yes, very much. Figure 3. shows openness to new experience change in the sample. By visual analysis it is fairly obvious that the majority of respondents rated this change above 5 on the scale. The rating scale data was recoded into a new category variable which categorized the data according to how significant the change in openness to new experience was yielding the following two categories: 1=significant change – data with scale values between 6 and 10, 2=not really significant – data with scale values between 1-5. The first category accounts for 79 % of the sample, M=8. Therefore it can be stated that in the present sample, which bears the main demographic characteristics of the typical wellness tourist, the tourist state results in a significantly raised level of openness to new experience as compared to openness to new experience in everyday circumstances.

Figure 3: Percentage distribution of openness to new experience change in sample



Source: Own editing

Openness to experience has been found to be positively correlated with the level of mindfulness (Giluk, 2009, van den Hurk et al., 2011) and sustainable behaviour (Markowitz,

Goldberg, Ashton, & Lee, 2012). Although positive correlation does not necessarily signal a causal relationship, the increased level of openness can facilitate a deeper insight into meditation practices and can also help to change the individual’s consumption oriented value system to a more sustainable paradigm. Although the generalisability of results is limited by the sampling process, these results suggest that potential wellness tourists undergo a significant change in terms of openness to new experience. The markedly raised levels of openness to new experience seem to support Hypothesis 1, namely that certain tourism contexts (e.g. wellness locations) are uniquely suited for learning meditation skills.

3.2 Google Trends analysis

Trend lines were fitted to the Google Trends time series data of the search expressions. As the main aim of the analysis was to establish whether the search expressions have had rising, falling or stagnating popularity only linear, quadratic and exponential regression models were used. Below is the list of the examined 68 search expressions for the base term “meditation” and 61 search terms for the base terms “mindful” and “mindfulness”. If popularity was falling or stagnating in at least the last two years it is marked as F or S in brackets after the expression. Expressions without F or S have had a rising search popularity globally at least in the last two years.

Search terms related to “meditation”:

benefits of mantra, benefits of meditation, benefits of yoga, best mantra, best meditation(s), best yoga, breathing meditation, chakra meditation, deep meditation, depression meditation, do mantra, free meditation, free yoga, guided meditation, healing meditation, health meditation, how meditate, how to do yoga, how to meditate, how to relax, kundalini meditation, learn meditation(S), learn yoga(S), love meditation, mantra meditation, mantra(s), meditate, meditation and anxiety, meditation and health, meditation audio, meditation benefits, meditation book(s), meditation classe(s) (S), meditation experience, meditation for you, meditation help, meditation master(s)(S), meditation music, meditation practice, meditation retreat(s), meditation teacher(S), meditation technique(s), meditation tips, meditation video(s), meditation youtube, meditation, money meditation, my meditation, online meditation, online yoga, osho meditation, power of meditation, practice yoga, sex meditation, spiritual meditation, tantra meditation(S), tantra(F), what is meditation, what is yoga, what meditation, why meditate, yoga for you, yoga master, yoga masters(S), yoga meditation(stag), yoga teacher(s), yoga, your meditation

Search terms related to “mindful” and “mindfulness”:

benefits mindfulness, do mindfulness, guided mindfulness meditation, how mindfulness, meditation mindfulness, mindful life, mindful living, mindful therapy, mindful way, mindful work, mindfulness, mindfulness and anxiety, mindfulness and depression, mindfulness and meditation, mindfulness and stress, mindfulness anxiety, mindfulness based cognitive therapy, mindfulness based stress reduction, mindfulness based therapy, mindfulness benefits, mindfulness book, mindfulness

books, mindfulness business, mindfulness center, mindfulness children, mindfulness cognitive therapy, mindfulness course, mindfulness depression, mindfulness exercise, mindfulness for anxiety, mindfulness for depression, mindfulness group, mindfulness groups, mindfulness guide, mindfulness guided, mindfulness health, mindfulness help, mindfulness how to, mindfulness jon kabat zinn, mindfulness kabat, mindfulness kabat zinn, mindfulness meditation, mindfulness music, mindfulness online, mindfulness practice, mindfulness school, mindfulness stress, mindfulness stress reduction, mindfulness teacher, mindfulness techniques, mindfulness therapy, mindfulness training, mindfulness video, mindfulness work, mindfulness yoga, mindfulness you, online mindfulness, practice mindfulness, what is mindfulness, what mindfulness, why mindfulness

Percentage distribution of rising, stagnating and falling trends is shown in tables 3. And 4.

Table 3: Percentage distribution of trends for “meditation” for 2014-2015

Trends based on regression	Frequency in sample	% in sample
Rising	60	88,2%
Stagnating	7	10,3%
Falling	1	1,5%

Source: Own editing based on www.google.com/trends data

Table 4: Percentage distribution of trends for “mindful” and “mindfulness” for 2014-2015

Trends based on regression	Frequency in sample	% in sample
Rising	61	100 %
Stagnating	0	0 %
Falling	0	0 %

Source: Own editing based on www.google.com/trends data

As it is shown in tables 3. and 4. the vast majority of “meditation” and “mindful”/“mindfulness” related search expressions have had a rising popularity at least in the last two years. For “meditation” related search expressions it is nearly 90 % of the examined 68 terms while for “mindful”/“mindfulness” related terms it is 100 %. The reasons for the bigger relative popularity of mindfulness was examined theoretically by Lengyel earlier (Lengyel, 2015) and now new empirical evidence is provided to support the theoretical suggestions. In addition to finding out about global trends in the popularity of these search expressions it is also important to explore how their popularity has been changing in the major tourist sending countries of Hungary specifically. Table 5. and 6. summarises results. I must be noted that in the case of “meditation” countries were examined using the actual language counterparts of “meditation”. For “mindful” and “mindfulness” it was not viable as “mindfulness” referring to certain types of meditation is rarely translated in the different languages.

Table 5. Search popularity trends for „meditation” in major tourist sending countries of Hungary

Country/guest night %	Germ. 17%	Aust. 7%	UK 6%	Russ. 6%	Ita. 5%	USA 4%
Google	↑since 2010	↑ since 2012	↑ since 2010	↑ since 2012	↑ since 2013	↑ since 2011
YouTube	↑since 2008	↑ since 2012	↑ since 2008	↑ since 2011	↑ since 2009	↑ since 2008

Source: Own editing based on www.google.com/trends data

Table 6. Search popularity trends for „mindful”/“mindfulness” in major tourist sending countries of Hungary

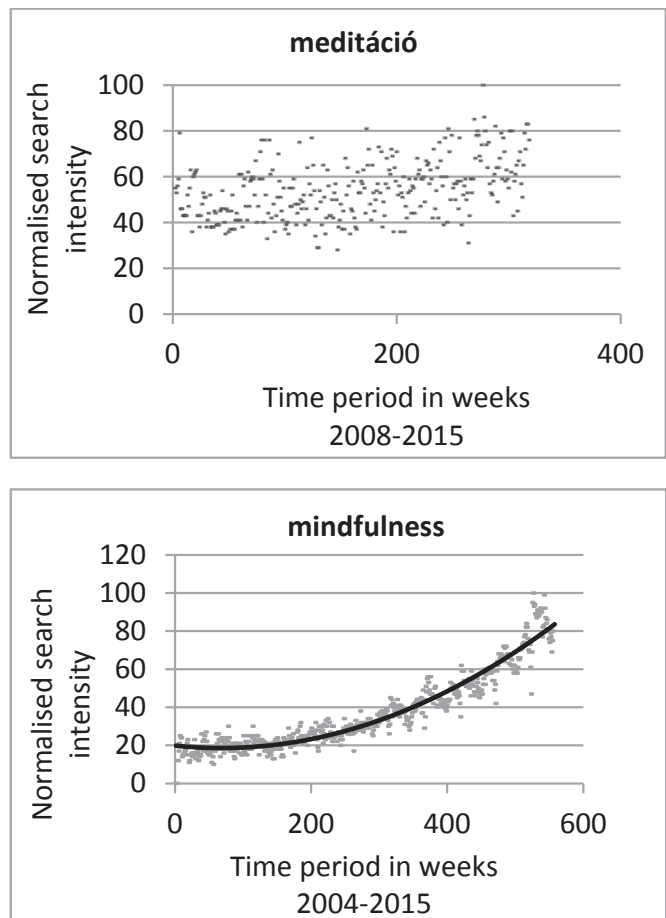
Country/guest night %	Germ. 17%	Aust. 7%	UK 6%	Russ. 6%	Ita. 5%	USA 4%
Google	↑since 2011	not enough data	↑ since 2008	not enough data	↑ since 2011	↑ since 2006
YouTube	not enough data	not enough data	↑ since 2012	not enough data	not enough data	↑ since 2011

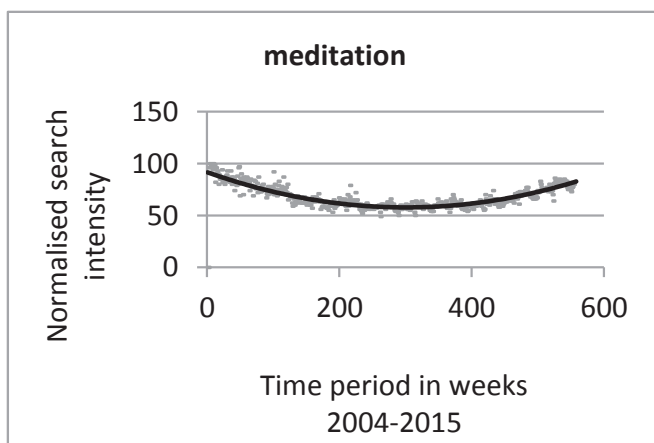
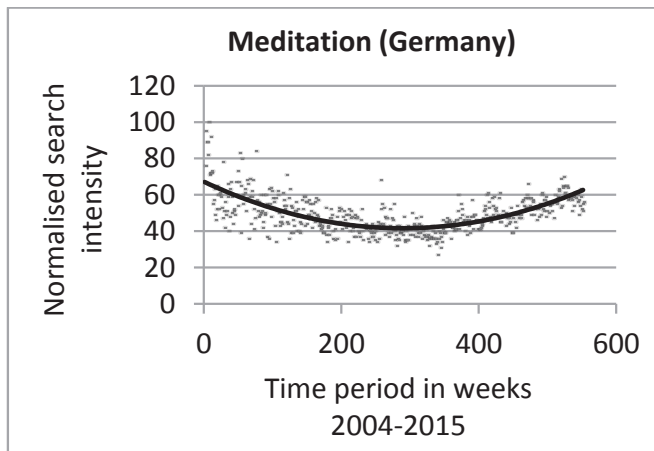
Source: Own editing based on www.google.com/trends data

Results depicted in tables 3, 4, 5 and 6 seem to support Hypothesis 2. It must be emphasized that online popularity of these terms does not have a direct link with potential online tourists. Not all those online users who positively influenced Google Trends data on the rising popularity of the examined search terms are necessarily potential tourists at the same time. There is no available scientifically validated data on what percentage of online users globally and in the examined tourist sending countries are actual or potential tourists, or more specifically wellness tourists. Nor can one find data on what percentage of online users interested in meditation and mindfulness are potential tourists. In all the examined countries and globally too, however, tourism is on the rise and its preparatory phases are increasingly managed online. Wellness tourism has also been enjoying an upward trend both globally and in the examined countries. Thus it might not be a far-fetched inference to suppose that a very high percentage of online users contributing to the above data are potential tourists. The reason why more data is accessible for the term “meditation” can probably be explained by two things. Firstly, “meditation” was translated to the examined countries’ own language. Expressions in own language usually result in more search data. Secondly, meditation as a notion has been around in western countries since the end of the 19th century, while “mindfulness” started to gain popularity in the 1980s in the United States first. As for the years when these expressions started to see a steadily rising popularity in Google and YouTube there are interesting differences to be observed. In the case of “meditation”, with the exception of Austria, for all other countries rising popularity started earlier on YouTube. For “mindfulness” it is the other way around for the UK and the US, the only two countries with analysable data in both Google and YouTube. It might have to do with the fact that while meditation as broad and sometimes confusing term was probably more easily popularised in a motion picture. Mindfulness on the other hand had enjoyed a much clearer status right from its debut in the 80s. The very first articles about mindfulness were accounts of clinical tests. It immediately gave it a stronger validity for the public. Also the special health programs like MBSR or MBCT based on mindfulness had a focused and clear message. Certainly these assumptions can be justified by scientific enquiry elsewhere. Also due to space constraints the search popularity change of only some of the basic search expressions are summarized in Figure 4. The regression lines show that in the last few years the popularity of these search terms has been growing steadily. The four expressions are “meditáció” (Hungarian for “meditation”), “Meditation” (German for meditation), “mindfulness” and “meditation”. Google Trends does not yield analysable data for “mindfulness” when filtering for Hungary, and in the case of Germany it is a similar exponential trend line as for the global popularity change for “mindfulness”, only starting later, in 2011. If we look at the four regression lines in Figure 4. there seems to be a connection between the 2007-2008 global financial crisis and the interest in meditation. With all four expressions search popularity started to rise around or after the crisis. It coincides with opinions cited

earlier regarding the need for a paradigm change in our world view and value system. Considering the rising popularity of the vast majority of search terms examined we can assert that both globally and regionally people are turning towards spiritual techniques such as meditation. Rising popularity of meditation and mindfulness also coincides with trends regarding institutionalised religions as it is apparent from censuses and other large sample survey data. Based on the 1949 census data members of the three largest historical churches (Catholic, Reformed, Evangelical) accounted for 97,6 % of the total population. This figure dropped to 73,1 % in the 2001 census and fell to 52,8 % in the latest 2011 census. According to Gallup’s survey in Germany and Austria, which are the two biggest tourist sending countries of Hungary, religiosity has decreased by 9% and 10% respectively since 2005. Parallel with these trends the number of those who consider themselves spiritual but not religious (SBNR) has risen markedly. The Eurobarometer 2010 survey found that 49% of the population of the EU 28 countries do not believe in a personal God but 26 % believes in some spiritual force (European Commission, 2010). These trends are relevant because the rising non-religious but spiritually interested segment might be a potential target audience for meditation based tourism services.

Figure 4: Trend lines showing change in search popularity of four basic meditation search terms





Source: Own editing based on www.google.com/trends data

4. Conclusions

From the empirical research it became evident that the state of being a tourist results in a significantly raised level of openness to new experience. As learning and practicing meditation requires great openness and a receptive attitude the tourism context, especially certain accommodation or destination types can be ideal for an introduction to various meditation techniques or during a longer holiday even for acquiring a deeper insight through practice. Meditation based services are tourism products that can be taken home and practiced without any costs or special efforts. If practiced regularly the ambitious goal of the Curing Hungary Health Industrial Program (Original government program titled: Gyógyító Magyarország Egészségipari Program) to improve the tragically bad physical and psychological condition of the Hungarian population through tourism might be realised. It was pointed out from literature that this goal is not realistic with only traditional tourism products as their positive effects fade out very quickly. On the individual level meditation can also catalyse the change in value system from the present, consumption oriented and increasingly unsustainable way of life to one that is based on spiritual rather than economic growth. On the corporate level meditation can contribute to sustainability by enhancing creativity and effectiveness. The results of Google Trends data analysis of meditation related

search expressions reinforce SpaFinder trend reports labelling mindfulness (meditation) as the most important trend on the wellness market. These favourable demand side trends, the government's plan to turn Hungary into the main country destination for health tourism in Europe, the pressing challenges of global, regional and local sustainability, meditation's varied benefits and the tourism context's unique suitability for learning meditation constitute a constellation that might be highly synergetic. Taking encouragement from the British example, the Hungarian government should seriously consider meditation's potentials in various areas. Also, government support in the form of tax benefits or direct subsidies should be available for those tourism service providers who offer meditation based services as part of their service portfolio. As in 2012 almost half of all guest nights were realised in wellness establishments and at present only a few offer meditation based services, there is plenty of space for expansion.

5. Limitations and further research

As the snowball method was used as sampling procedure yielding a sample of convenience the generalisability of results is limited. However, in terms of certain demographic characteristics the sample proved very similar to the demographic profile of the typical wellness tourist, hence even if in a limited way it was possible to take some general conclusions. As the openness to new experience in tourists has not been researched before in Hungary it might be useful to further examine this area on samples that give ground to a much greater level of generalisation. Further research in connection with openness to new experience might focus on different tourist types and demographic segments. Although the research on Google Trends allows for greater generalisation regarding market trends, the sample of examined expressions can be expanded and examined in relation to trends for search expressions of other related fields using complex statistical analysis methods.

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THE MBA LABOUR MARKET: A NOTE ON THE GLOBAL PERSPECTIVES FOR GRADUATES IN 2015

Wim Heijman

Abstract: What are the labour market perspectives for MBA graduates in 2015? Each year the GMAC carries out a year-end poll to find out the hiring plans of the employers with respect to graduates in business studies. This short notes presents the most important results for MBA graduates.

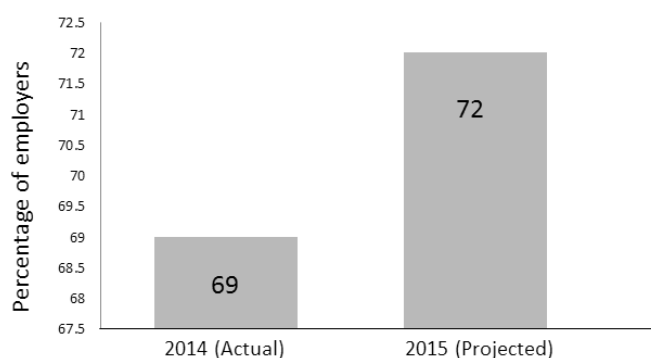
Introduction

This note is based on the 2014 Year-End Poll of Employers carried out by the GMAC. As such the results may also apply to the graduates of the AGRIMBA graduates. “The 2014 Year-End Poll of Employers is a product of the Graduate Management Admission Council (GMAC), a global non-profit education organization of leading graduate business schools and the owner of the Graduate Management Admission Test® (GMAT®)”. (GMAC, 2014). This note provides the main outcomes of the global 2014 end of the year poll carried out under employers by the GMAC. See the appendix for detailed information about the poll.

Hiring and Pay

Figure 1 provides information on the hiring plans of the employers. It appears that 72% of the respondents plan to hire MBA graduates in 2015 compared to 69% of the employers that actually hired an MBA graduate in 2014.

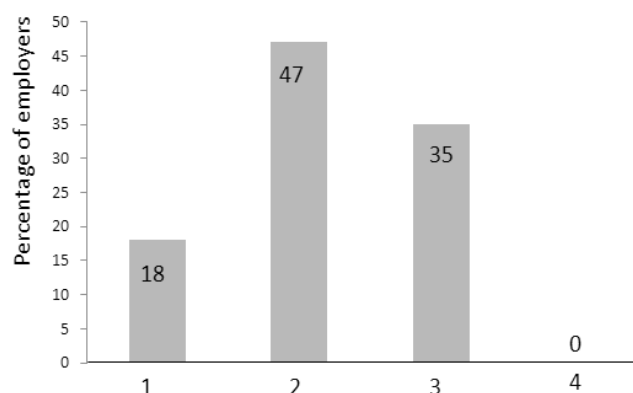
Figure 1: 2015 Hiring Plans and 2014 outcomes



Source: GMAC, 2014.

It appears that 72% of the respondents plan to hire MBA graduates compared to 69% of the respondents that actually hired an MBA graduate in 2014.

Figure 2: Expected change in 2015 average annual salaries compared to 2014.



- 1: Increase above the rate of inflation
- 2: Increase at the same rate as inflation
- 3: Stay the same as 2014
- 4: Decrease compared to 2014

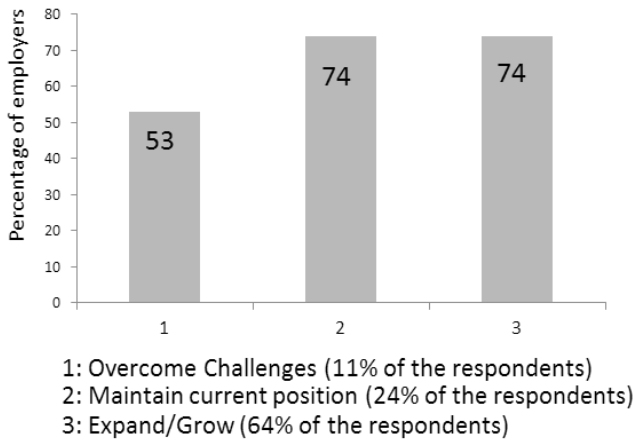
Source: GMAC, 2014.

Figure 2 shows that getting a substantial raise in pay (Category 1) is available for 18% of the MBA graduates, while a nominal decrease in pay (Category 4) is not foreseen.

Strategic Goals of the employers

GMAC distinguishes three types of strategic goals for employers: 1. Overcome challenges (11% of all respondents), 2. Maintain current position (24%) and 3. Expand/Grow (64%). It appears that the employers hiring policy with respect to MBA graduates depends highly on this policy (Figure 3).

Figure 3: Goals of the company and hiring plans.



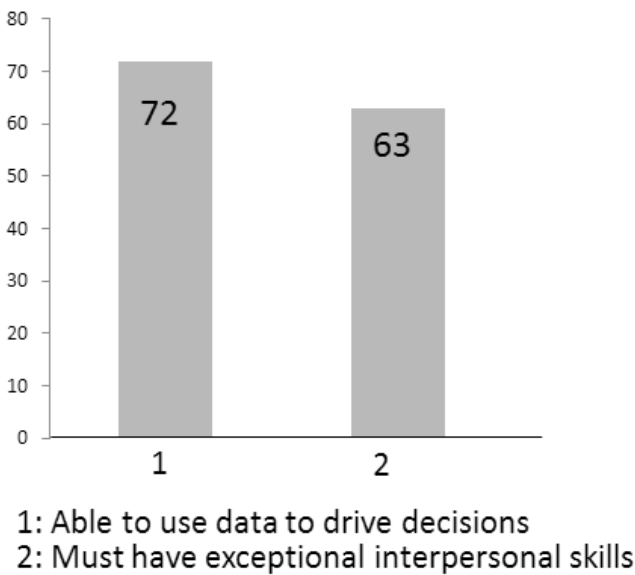
Source: GMAC, 2014.

Figure 3 shows that especially growing companies and companies that aim at maintaining their current position are keen on hiring business school graduates. This contributes to the favourable outlook of 2015, because these types of companies represent the far majority of the respondents (88% in total).

Employers’ expectations

Finally, what do the employers expect from their freshly hired MBA graduate (Figure 4).

Figure 4: Employers’ expectations of MBA graduates.



It appears that two types of skills are said to be very important: the ability to use data to support decision making and interpersonal skills. In the 2013 GMAC Survey respondents said that the most important skills they expect from newly hired personnel with an MBA are oral and written communication. Employers complained that business schools pay too little attention to these ‘soft skills’. In 2013, for employers, graduates’ managerial skills like ‘decision making’ and ‘leading innovation’ were least important (Korn , 2014).

Results

On the basis of the outcomes of GMAC’s 2014 Year-End Poll of Employers it can be stated for MBA students the global labour market looks favourable:

1. 72% of the responding employers is planning to hire an MBA graduate in 2015 where only 69% did so in 2014.
2. No decrease in pay for the MBA graduates base salary is to be expected; 18 percent of the responding companies were even indicating that they would provide for an increase of the base salary above the rate of inflation.
3. Especially the companies that are planning for expansion/ growth or maintain the current position that are planning to hire MBA graduates in 2015. Because this is by far the majority of the responding companies, this contributes to the favourable outlook at the labour market.
4. Employers are especially interested in two types of skills: Able to work with data in order to support decision making and interpersonal communication skills.

Conclusion

The GMAC’s report shows that for MBA graduates the global labour market is favourable and that a decrease in pay is not foreseen. Combined with the results of GMAC’s 2014 Alumni Perspectives Survey carried out among 21,000 business school alumni around the world, showing that, even in times of recession, at least 95% of all the graduates rate the value of their degree as good to outstanding, it means that an MBA degree still is to be considered valuable asset (Schoenfeld, 2014). This does not mean that MBA programs should not change. Probably, it would be worthwhile for MBA programs to pay more attention to ‘soft skills’.

Appendix

The latest GMAC annual year-end poll of employers consisting of 17 questions was carried out from October 27th till November 16, 2014. It was sent to 5,754 employers world wide. The response rate was 2.9%. The outcomes of the poll are not representative for all employers of business schools graduates. Companies from the following regions/countries responded to the poll: Asia-Pacific: Australia, China, Hong Kong (SAR of China), India, Kazakhstan, Pakistan, Singapore, Thailand, and Vietnam; Canada; Europe: Bosnia and Herzegovina, Denmark, Finland, France, Germany, Greece, Italy, Norway, Portugal, Republic of Moldova, Slovenia, Spain, Switzerland, and United Kingdom of Great Britain and Northern Ireland; Latin America: Brazil, Costa Rica, Mexico, Peru, and Venezuela; Middle East and Africa: Morocco, South Africa, Turkey, and United Arab Emirates; United States: United States of America and its territories (GMAC, 2015).

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Editor in Chief: *Johan van Ophem*,
Wageningen University, The Netherlands

Associate Editor: *Krisztián Kovács*

University of Debrecen

Faculty of Economics and Business

Hungary, 4032 Debrecen, Boszormenyi ut 138, Hungary

Tel: 00/36/52/526-935

e-mail: kovacs.krisztian@econ.unideb.hu



Editor: *Johan van Ophem* – Editorial office: H-4032 Debrecen, Böszörményi út 138.

Phone/fax: (36-52) 526-935 • E-mail: kovacs.krisztian@econ.unideb.hu

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ABSTRACT

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